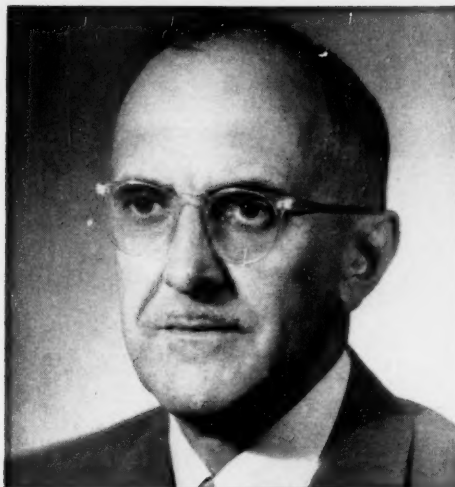


THE *Soybean Digest*



Retiring president Ersel Walley. He coined watchword, "Soybeans Are Worth More Money," theme of ASA's 29th convention.

Official Publication
AMERICAN SOYBEAN ASSOCIATION

VOLUME 9 • NUMBER 11

SEPTEMBER • 1949

The Man Who Knows What to Do



"DOC" MacGEE SAYS:

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THE *Soybean Digest*

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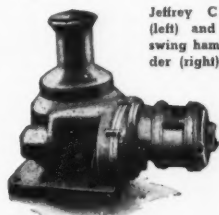
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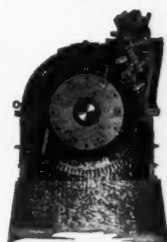


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Jeffrey has been privileged to contribute to the speed-up process in many industries. The Soybean Industry is no exception. A few views are shown here—we cannot hope to show everything Jeffrey makes to hasten material on its way or to reduce it as well as costs. We will be glad to send literature if you are interested in doing a better job—faster.



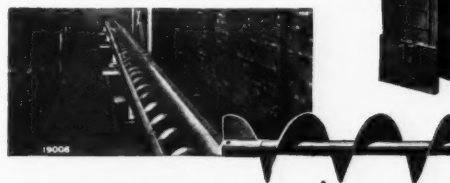
Jeffrey Car Puller (left) and a Jeffrey swing hammer Shredder (right).



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Jeffrey 3-pulley Belt Idler (above); a Jeffrey Bucket Elevator is shown right; Jeffrey Spiral Flight and installation (below).



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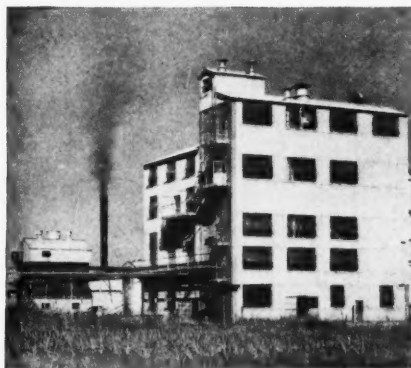
R. C. Schall, Manager of Field Warehouse Division and J. P. Schwab, district Manager will be at Nicollet Hotel September 6-8 for the A.M. Soybean Association Convention. They will welcome the opportunity of discussing Field Warehousing with you.

New Oil Extraction Record of 99.41% set by Tennessee Mill!



Peter Fredrickson

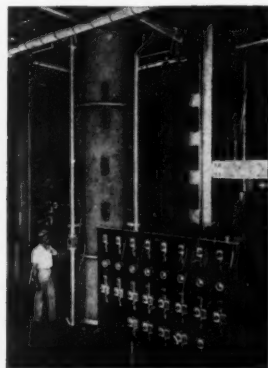
"IT'S AN ALL-TIME HIGH for us," states Mr. Peter Fredrickson, manager of the West Tennessee Soya Mill, Inc., Tiptonville, Tennessee. "Our old plant had a screw press system. Our new mill uses the Allis-Chalmers continuous system of solvent extraction which is a tremendous improvement. Recent figures show that residual oil in the extracted meal is down to a record low of .59%. We are actually extracting 99.41% of the oil from the soybeans processed in our mill."



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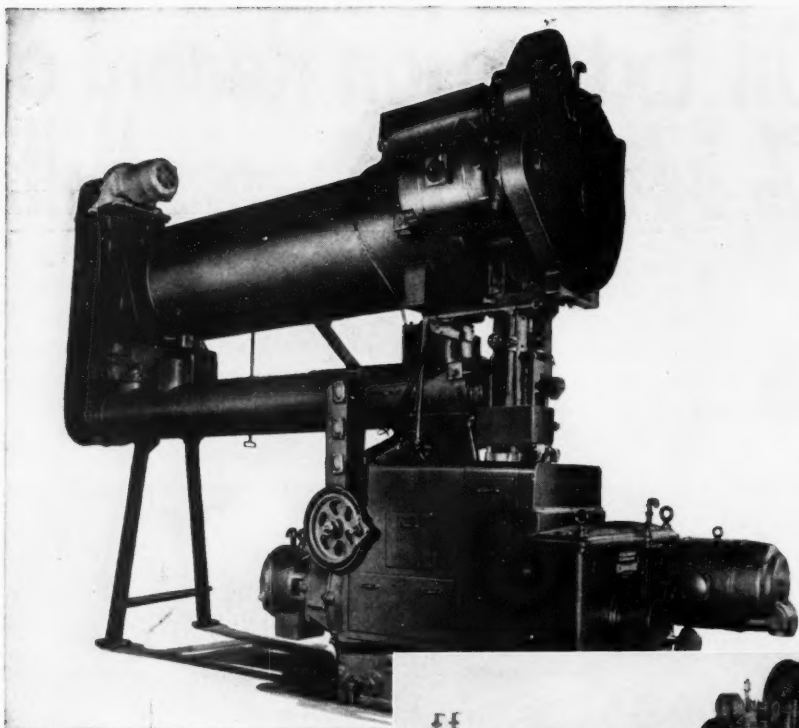
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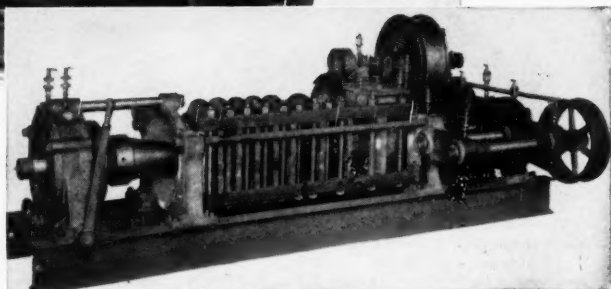
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Above: Modern Anderson Twin
Motor Super-Duo Expeller



Right: Small No. 1
Anderson Expeller

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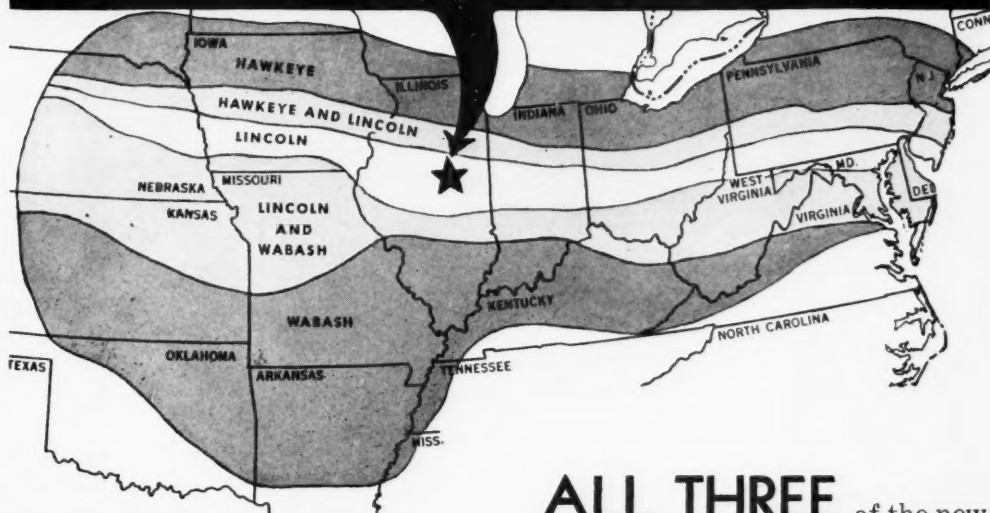
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HAWKEYE . . . A week earlier than Lincoln with the same high oil content. Greater yield, taller stand, and higher oil content than Richland or other older varieties for northern soybean belt. Fits with Lincoln into a two-variety system of soybean growing.

WABASH . . . A new variety for the southern part of the soybean belt that combines high yield, high oil content, good standing ability, desirable height and good quality seed. A week to 10 days later maturing than Lincoln. Yellow seeds in pods borne above ground level to reduce combining loss.

ALL THREE of the new, recommended, popular soybean varieties are now available from one convenient, central source — Funk Bros. Seed Co. Now you can contract your seed requirements for the famous Lincoln variety and also for the earlier-maturing new Hawkeye and the longer season Wabash varieties from Funks.

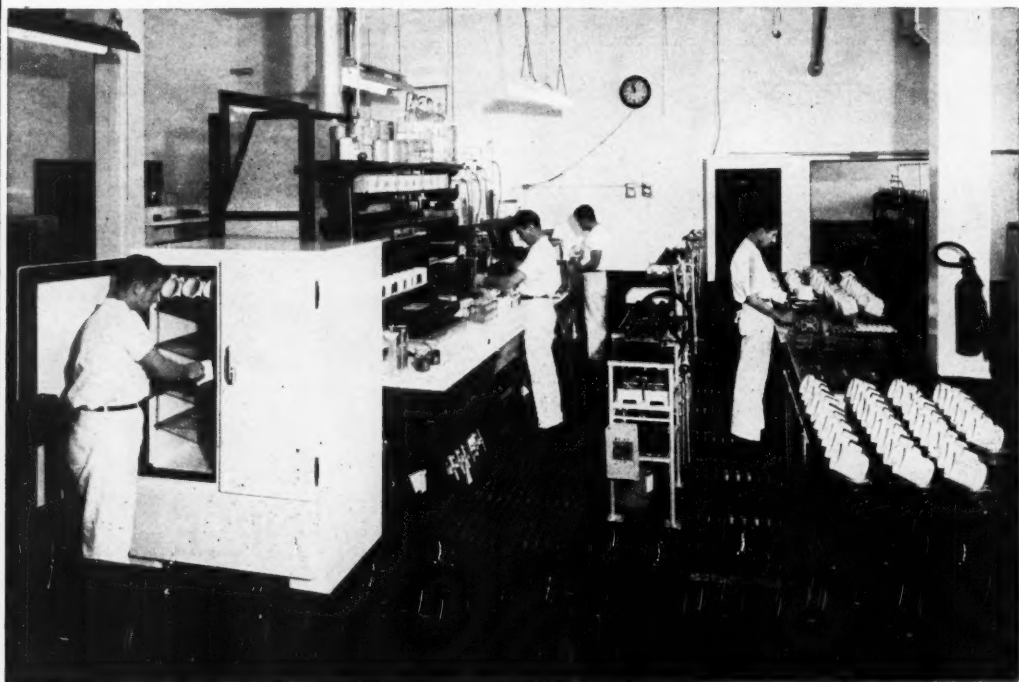
Soybean growers are demanding these popular varieties throughout their adaptation areas shown on the map above. Your customers will want to plant them. Meet this demand with high quality, Certified seed from Funks. Write for descriptive circular and quotations on Lincolns, Hawkeyes and Wabash soybeans.



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(Below) The 4 tanks below have 104,000 bu. storage capacity. This firm recently ordered additional tanks to increase storage capacity 50%.



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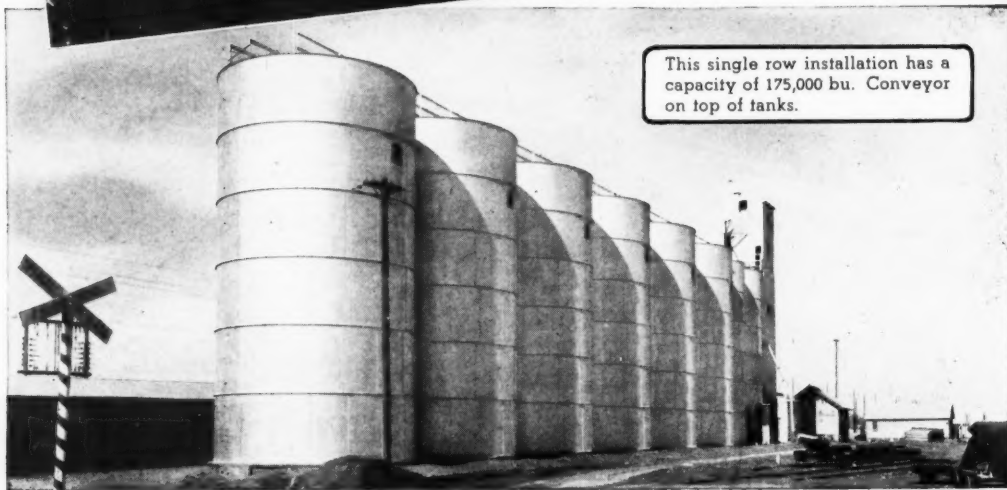
After over a quarter of a century of manufacturing COLUMBIAN Bolted Steel Grain Storage Tanks, they continue to prove superior because of Columbian's exclusive and important details of design. Even after 25 years of service some users have added rings to increase storage capacity.

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This single row installation has a capacity of 175,000 bu. Conveyor on top of tanks.

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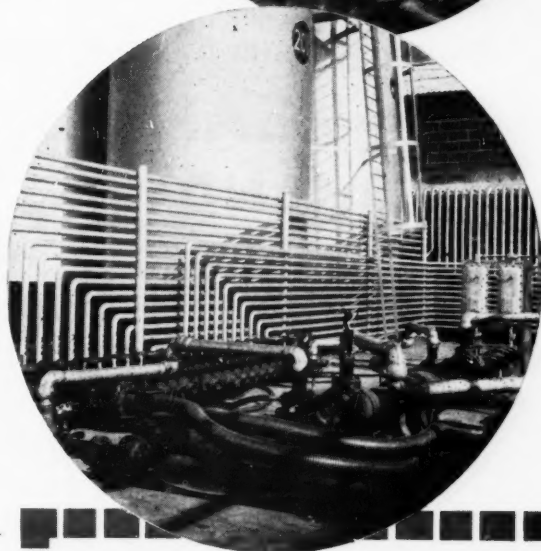
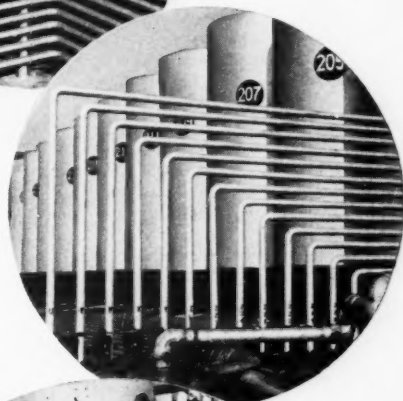
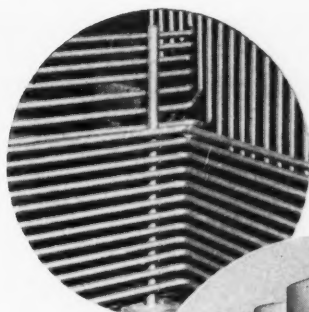
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ACTIVITIES OF YOUR ASSOCIATION

MORE GOOD MEETINGS IN THE DELTA

A large number of soybean producers, grain buyers and other interested persons attended local soybean meetings sponsored by the American Soybean Association in the Delta sections of Missouri, Tennessee and Arkansas August 15 to 19.

The meetings were held to discuss soybean problems and the Association's program to solve those problems. Discussions included the government's support program and the Association's finance plan which includes payment of 20 cents per 100 bushels by growers to be collected by grain men when they sell their soybean crop.

People who attended indicated

that they would give hearty backing to the Association's efforts for improved production and utilization of the crop.

Meetings were held at St. Charles, Mo., with H. V. Seeburger as chairman; Charleston, Mo., W. H. Haslauer, chairman; Malden, Mo., J. E. Hunt, chairman; Paragould, Ark., E. N. Sanders, chairman; and Ripley, Tenn., Anthony Fisher, chairman.

Present were Geo. M. Strayer, secretary-treasurer of the American Soybean Association, and Paul C. Hughes, Association's field service director, both of Hudson, Iowa.

Strayer reviewed events at Washington where he has been called frequently for governmental hear-

ings, and other matters that affect the soybean industry and call for governmental action.

Hughes explained in detail the way the Association program is set up and the need for strong activity in the local communities in the soybean belt if the program is to succeed.

Hughes is contacting all soybean buyers in the area where the meetings were held asking them to sign agreements to act as collectors for the Association on the 1949 crop.

GROWERS

BEANS IN THE DEEP SOUTH

Interest in soybeans as a cash crop is growing in the Deep South states of Alabama, Georgia and in a few counties of west Florida.

Soybeans have been widely grown for hay in these states. But interest in the oil-types is now increasing for several reasons. One is that peanut acreage is being cut by the imposition of marketing quotas. Both oilseed crushers and farmers are looking for a profitable crop to replace part of the peanuts and keep mills running.

Another is that farmers are learning that soybeans fit well into two-crop combinations—a crop of soybeans is grown in the same season following another crop.

Also, better varieties are becoming available as acreages of some of the newer varieties developed through the cooperative tests of the U. S. Regional Soybean Laboratory are being increased.

Finally, the market is available in local cottonseed crushing plants for any acreages of soybeans that may be grown.

Alabama

Nine-tenths of Alabama soybean production is concentrated in a single county—Baldwin. For a number of years the farmers in Baldwin County have been planting beans after harvesting their truck crops, to take advantage of the fertilizer applied on the truck crop.

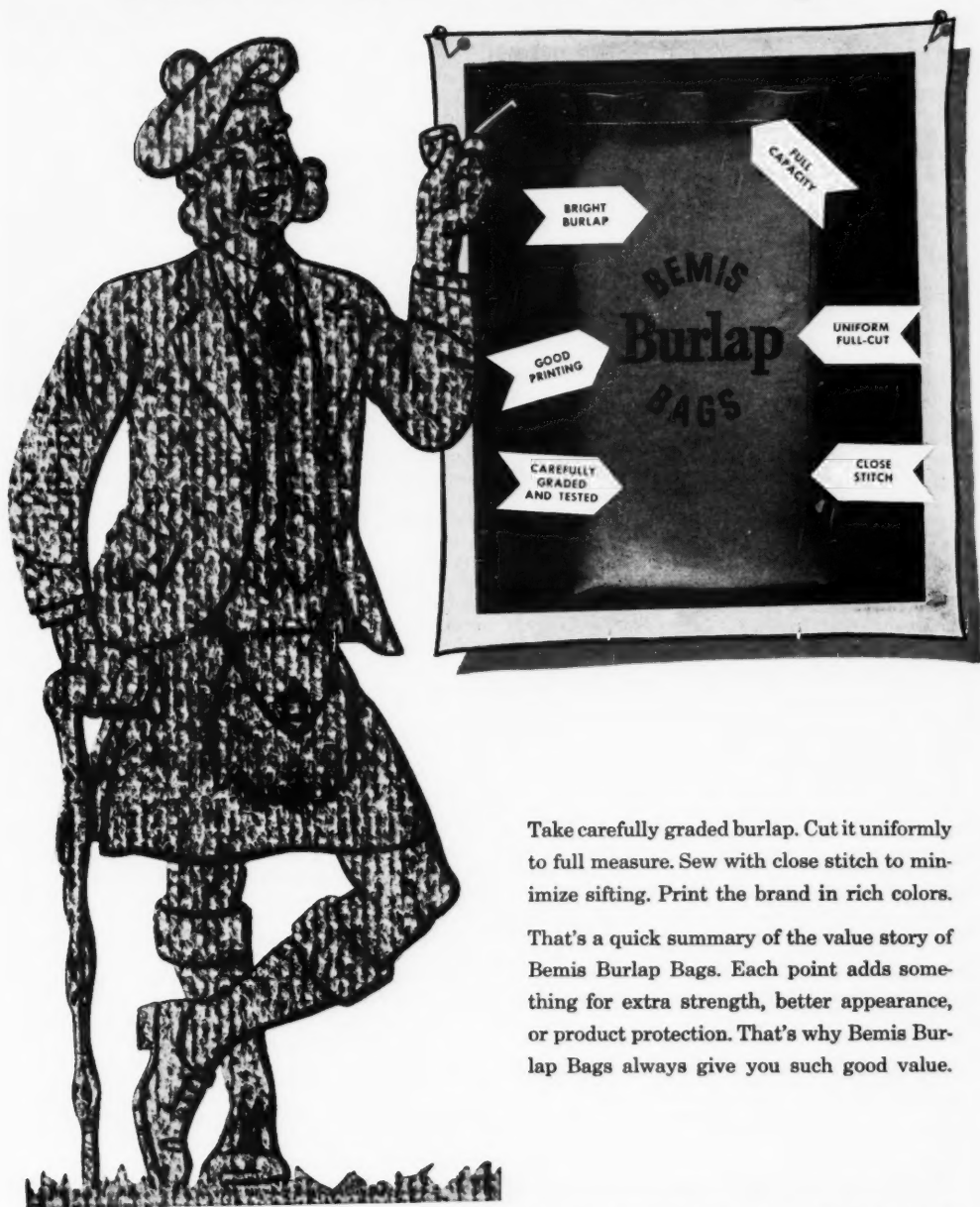
Baldwin County farmers grow a considerable acreage of Irish potatoes. These are harvested in May and the land is then planted to soybeans. The beans are planted in 38-, 40- and 42-inch rows and cultivated two or three times. Yields average 23 or 24 bushels per acre and up to 30.

In 1948 about 40,000 acres of

ONE LESSON LEARNED AT THE 29TH CONVENTION



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Wichita

soybeans were grown in Baldwin County, seven-eighths of them oil-type beans, according to F. C. Turner, county agent at Bay Minette. Most of the acreage was planted to the Ogden variety, with some Clemson Non-shatter. Some new varieties such as Dortchsoy are also coming in.

Soybeans are also being grown as a cash crop in some of the adjoining counties in Florida.

Georgia

In Georgia, soybeans are being planted mostly on a trial basis, except for hay. Certain oil mills have, for the past 2 or 3 years, been encouraging trial plantings of soybeans in various communities in their trade territories. In 1943 the program was expanded to cover all parts of the state. Through the efforts of the Georgia Cottonseed Crushers Association trial plantings were made in a number of counties with farmers who could handle the crop and were willing to carry out the program for the sake of finding out what the possibilities of the crop are in Georgia. Yields ranged from 6 to 20 bushels per acre.

"We are very much encouraged by the responses we had in the beginning," according to J. E. Moses, secretary of the Association, "but on account of unfavorable weather conditions, as well as other hazards, we did not get the results which we expected and which, I feel confident, we would have had with a better break in the weather. We are continuing to encourage the planting of soybeans on a small scale, but we are not making it a campaign for large scale plantings."

Individual plantings by farmers are small and the possibilities of different varieties are being explored. Many producers have divided their acreages between two, three or four types of beans to determine the most satisfactory one. Varieties that

are being tried under field conditions include Ogden, Roanoke, Aca-dian, Pelican, CNS, Wood's Yellow, Mamloxi and Yelnando.

Some Georgia counties have shown an unusual acreage increase, considering the very limited original acreage. Numerous county meetings, particularly in middle Georgia, have been held to discuss the crop. A number of county agents have become interested. Experiment stations are cooperating in the U. S. Soybean Laboratory's uniform variety tests, and some of the stations have been particularly helpful from a development standpoint. Especially active have been U. R. Gore at Experiment and E. D. Alexander, extension agronomist at Athens.

Most of the small Georgia acreage is planted in rows. Rates of seeding are generally lower than is desirable, due perhaps to the low requirements for the familiar small-seeded hay types planted in the past. Producers with experience behind them generally tend toward the rate of 1 bushel per acre.

Row widths for the most part have followed equipment originally set up for cotton production, but there is a steady trend toward narrower row widths made possible by the use of grain drills. Strong efforts are being made to get producers to inoculate their seed.

In south Georgia particularly considerable new interest in soybeans is resulting from the search for a crop to replace peanut acreage. Interest also has been aroused in the possibilities of planting soybeans after grains and blue lupine in many areas. In some cases soybeans have been planted too late for maximum yields, but normally the two-crop combination seems to be quite satisfactory. Many two-crop producers feel that income from these combinations is high enough to sacrifice some soybean yield.



E. D. ALEXANDER

The main production problem in Alabama is inroads of the velvet-bean caterpillar, according to Otto Brown, superintendent of the Gulf Coast Substation at Fairhope. The caterpillar is present almost every year but usually can be controlled with either DDT or cryolite. The caterpillar is also bothersome in Georgia. DDT is not necessarily effective on some species of the worms that have attacked Georgia soybeans, according to work at the Coastal Plains Experiment Station at Tifton, Ga. This station reports good control of the caterpillars with 20 percent Toxaphene.

"Some of the difficulties in soybean production in Georgia as compared with the main soybean area of the United States are low organic content of the soil, drought at blooming time, insect damage, and a combination of other things such as unadapted varieties, and improper spacing and fertilization," says Alexander. Most of these difficul-

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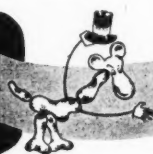
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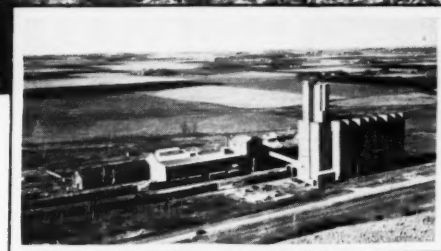
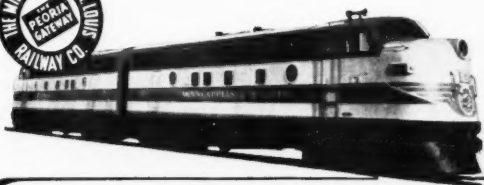


Soy Bean..

and the M. & St. L.

The Minneapolis & St. Louis Railway salutes the great and growing Soy Bean industry and its mighty part in recent agricultural and industrial progress, on the occasion of the 29th Annual Convention of the American Soybean Association in Minneapolis, home city of the M. & St. L.

As an important carrier of Soy Beans and the many products made from this modern "Miracle Crop," the M. & St. L. fully appreciates the contribution of Soy Beans to farm and business prosperity in the Great Midwest, particularly the four states served by
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In 1948, Illinois, Iowa, Minnesota and South Dakota harvested 5,926,000 acres of Soy Beans, slightly more than half of the total United States acreage. They produced 130,119,000 bushels, just three-fifths of the nation's crop of 220,201,000, greatest in history.

Illinois, the No. 1 Soy Bean grower, harvested 78,504,000 bushels, more than double the production of any other state. Iowa ranked second, with 35,443,000, and Minnesota was sixth, with 15,614,000.

Soy Bean is called the "Miracle Crop" because of its manifold uses and the rapidity with which it has become a great and profitable factor in American farming.

The M. & St. L., specialist for 78 years in transportation for agriculture, networks some of the richest Soy Bean growing areas and directly serves five large processing plants. To Soy Bean producers and processors, the M. & St. L., a modern, well equipped Railway, offers the same Fast, Dependable Freight Service it has provided since 1871 for other products of agriculture and industry.

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ties, with the exception of drought, can be overcome. Drought at blooming time is a problem.

"The results so far do not show that soybeans will bring a cash return comparable with our leading cash crops, but with combines and the need of the crop to follow cover crops and small grain, soybeans have a distinct possibility of a place in Georgia agriculture."

REPORT ON FLAMING BEANS

Flaming soybeans gives good weed control and also offers some other advantages, according to Walter M. Scott, Jr., of Scott Plantations, Tallulah, La., where flaming is practiced extensively.

"We have found that the best weed and grass control comes with the correct timing in burning," says Scott. "That is, burn the crop, skip 2 days, burn it again, skip 3 days, and burn it again.

"It is almost imperative to cultivate with sweeps behind the burner to prevent packing the ground like concrete. We were not able to do so this year, but I want to try an experiment using nothing but rotary hoe and flame cultivator. In a normally dry year I believe it will work satisfactorily. This has been an unusually wet season.

"Something I have noticed and never heard mention of is that after being flamed a couple of times the beans seem to make a rapid growth for about a week. I also believe the burning tends to make the stem or stalk sturdier with less likelihood of lodging. Another thing is that the flame helps to control the bugs of which the alfalfa stem borer is one that bothered us last year. It



You see Warren S. Patrick in a field of Ogdens 40 days after planting. Field, on Scott Plantations, Tallulah, La., has been flame cultivated twice. Try to find some weeds!

is not much in appearance this year where we have used the flame.

"They say that flaming decreases the yield slightly. As yet we have no check on that. I have no doubt that the flame will blast some of the lowest bloom buds, but most of those pods maturing below 4 or 5 inches above the ground will not be cut with a combine anyway. Yields gathered with a combine and yields gathered by hand never jibe.

"For our work we have used a Gotcher flamer and burned propane gas. The average cost per acre of operation will run just under 50¢ per flaming. Ours is a 4-row burner and on 24-hour operation will cover 110 to 120 acres.

"The planting and cultivation should be as flat as possible to get best results from the burner."

24 STATES CERTIFY SEED

Soybean seed was certified in 24 states in 1943, according to the annual summary of crop certification compiled by K. E. Beeson.

Report of Seed Certified in 1943 by State Certifying Agencies, lists the states certifying, the varieties certified and the acres and bushels certified in each state. The report covers all crops that are certified.

Seed of 40 varieties of soybeans was certified in 1943, totaling 1,793,609 bushels on 76,986,000 acres.

Names of the various state certifying agencies with their directors are listed in Beeson's report.

— s b d —

Soybeans are not widely grown in Iowa cornfields. But Joe Seymour of Warren County, Iowa, plants soybeans in each hill of corn, to loosen the soil, he says.

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No. 208 THERMOMETER. For use with Steinlite Moisture Tester. Graduations easy to read at arm's length. Each . . . **\$3.** With half-pint sample can and stopper as shown . . . **\$3.25.**

No. 77-6", No. 36-9" and No. 79-12" BAG TRIERS. Nickel plated steel. Each **\$1.85, \$3.60 and \$4.15.**

No. 26 WEIGHT PER BUSHEL TESTER. Accurate, rugged, durable. Complete with strike-off stick. 1 quart capacity—Price . . . **\$25.50.**

No. 150 FILLING HOPPER AND STAND. For use with 1 pint and 1 quart weight per bushel tester. Price, without cup . . . **\$21.75.**

No. 22-5 GRAIN PROBE—63". The official Government standard probe. Made of extra heavy gauge brass. Price . . . **\$23.50.**

No. 10 GRAIN DOCKAGE SIEVES. Made of 20-gauge aluminum, 13-inch diameter, 1 1/4 inch inside depth. Precision and commercial grades. See catalog for perforations available and prices.

No. 372 THERMO-SAMPLER TORPEDO. For checking temperature, moisture and infestation with a single sample from any point in a bin. 3-foot extensions available. Price . . . **\$15.** Extensions . . . **\$1.30 each.**

No. 20 TRIER. Double-brass tube, open handle. 40 inches in length, 1 3/4 inches outside diameter, 6 openings. Price . . . **\$15.**

No. 64 SAMPLE PAN. For handling samples of grain for testing and grading. Standard in all respects. See catalog for prices.

No. 14 FOUR-IN-ONE SCALE. For weighing samples and mail, determining test weights per bushel, dockages, etc. Sensitive to 1/10 gram. Complete, with cup . . . **\$39.50.** Without cup . . . **\$36.**

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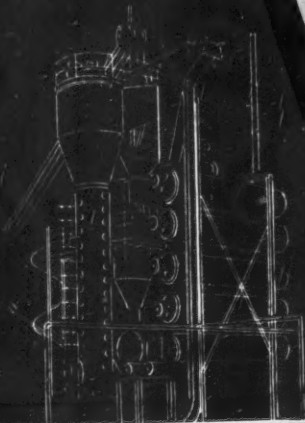
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**SOLVENT
EXTRACTION
UNITS**
at work



WHY

ANDERSON SOLVENT EXTRACTION UNITS ARE PREFERRED

On these pages we are showing a group of ANDERSON Solvent Extraction Units in operation today. Other units are in the course of manufacture or erection. Preference for this type of equipment is based on the following economy and efficiency features:

ANDERSON Solvent Extraction Units are prefabricated into a number of large sub-assemblies that are shipped by freight, placed into position and connected up under the supervision of ANDERSON erection and job project engineers.

The units are self-supporting, that is, they are not integrated into a large expensive building—in fact, they need no building but are erected out in the open close to a preparation building. Instead of large acreage, only a small plot of ground is needed. The fact that there is no expensive building to be erected results in a saving in building costs, building time and maintenance costs.

Since they are out in the open, there is no place for vapors to be confined—no chance for explosion and presenting only a minimum fire hazard, resulting in a more favorable insurance rate.

Each ANDERSON Solvent Extraction Unit of a given capacity has all parts identical. In other words, they are standardized.

The ANDERSON Unit is operated by remote control by one man in the small preparation building. Controls and indicators are read and operated by one man so that every phase of the processes may be controlled without leaving his station.

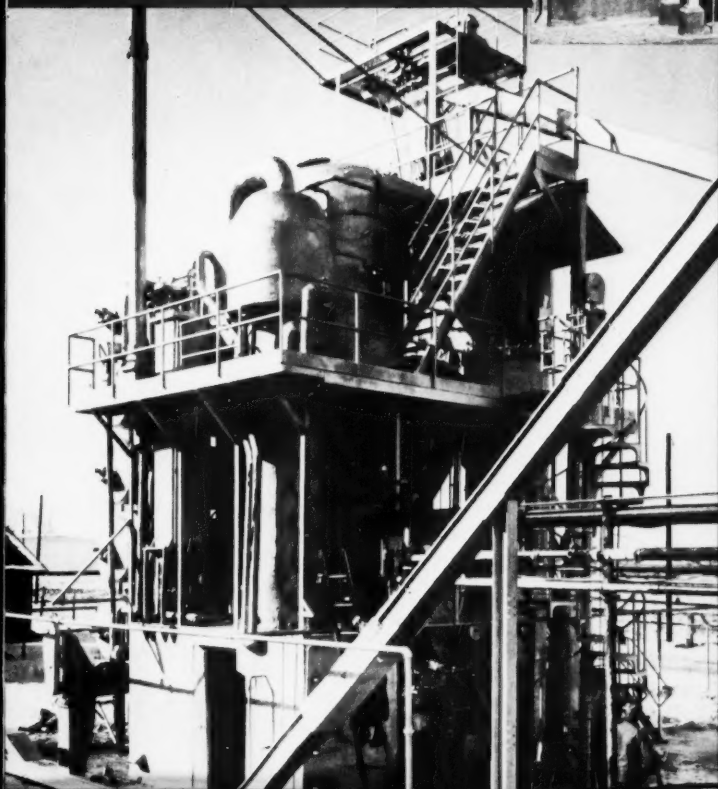
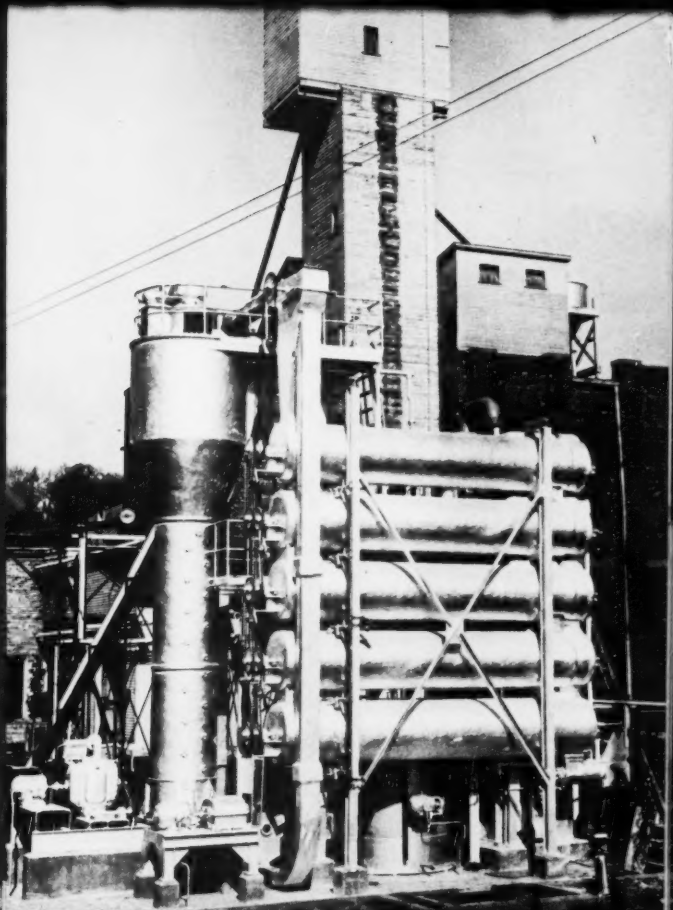
There is an ANDERSON Solvent Extraction Unit engineered to meet your capacity requirements and to give a guaranteed performance. In most cases, they have higher production and even better rated capacities.

The installations shown here were erected and placed in operation by The V. D. Anderson Company, the world's largest manufacturer of vegetable oil extraction equipment—a company which has been in business more than 60 years and a company that stands behind their products.

These are reasons why ANDERSON Solvent Extraction Units are preferred as the most efficient equipment that money can buy.

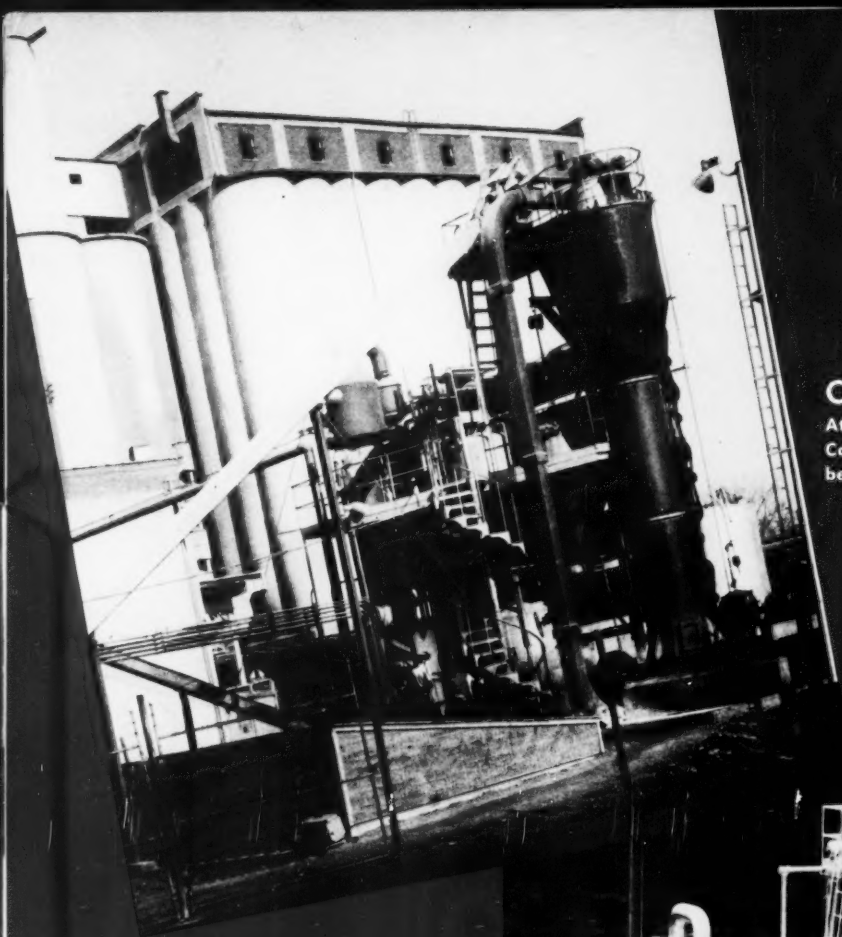
MUSCATINE

Processing Corporation at Muscatine, Iowa, has been operating this unit processing soybeans since February 1948.



ST. JOSEPH, MO.

has an ANDERSON Solvent Extraction unit which has been operated by Dannen Grain & Milling Company, Inc., since December 1947.

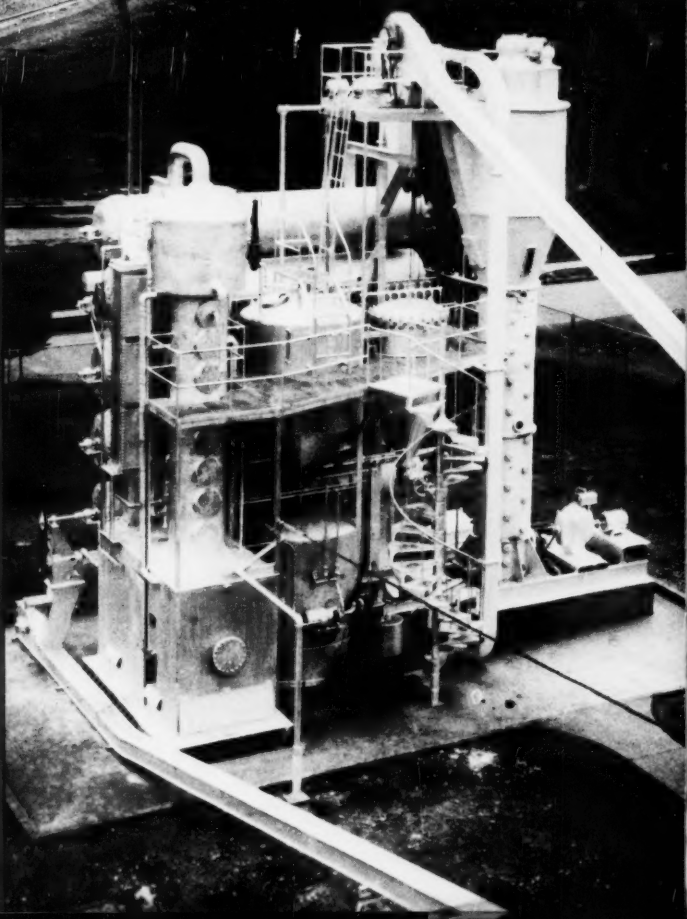


COLUMBUS, OHIO

At the left is the Soy Extraction Corporation unit which has been operating in Columbus since December 1947.

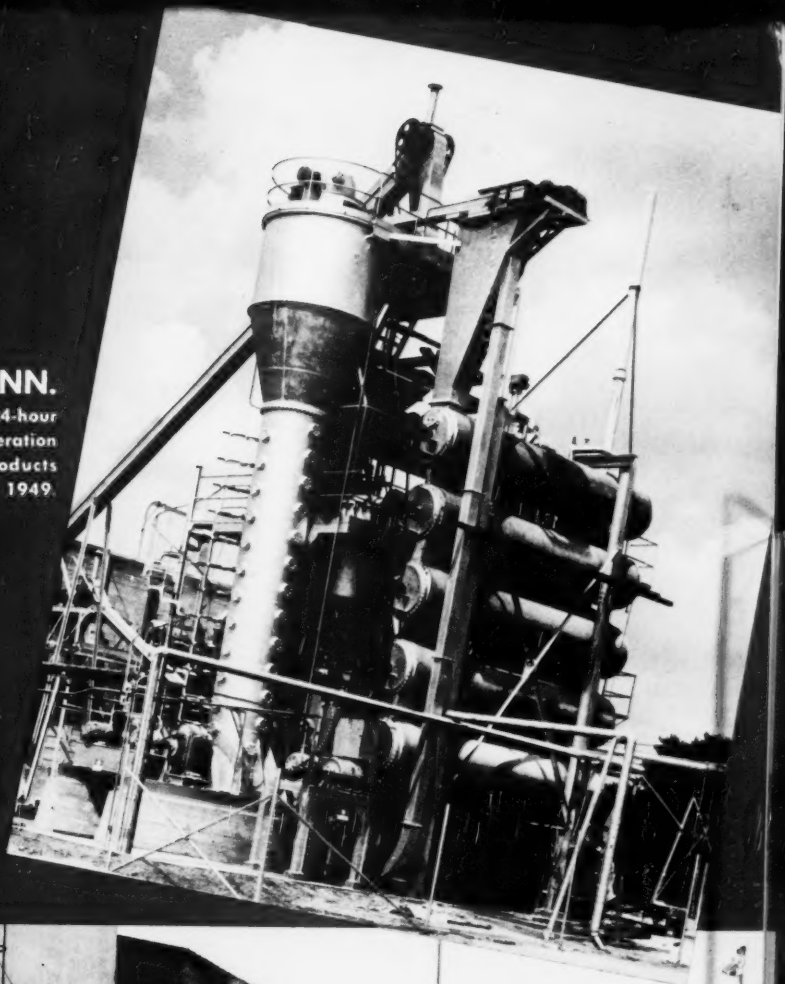
WOOSTER, OHIO

In September 1947, this unit located in Wooster, was first put into operation by the Soya Processing Company.



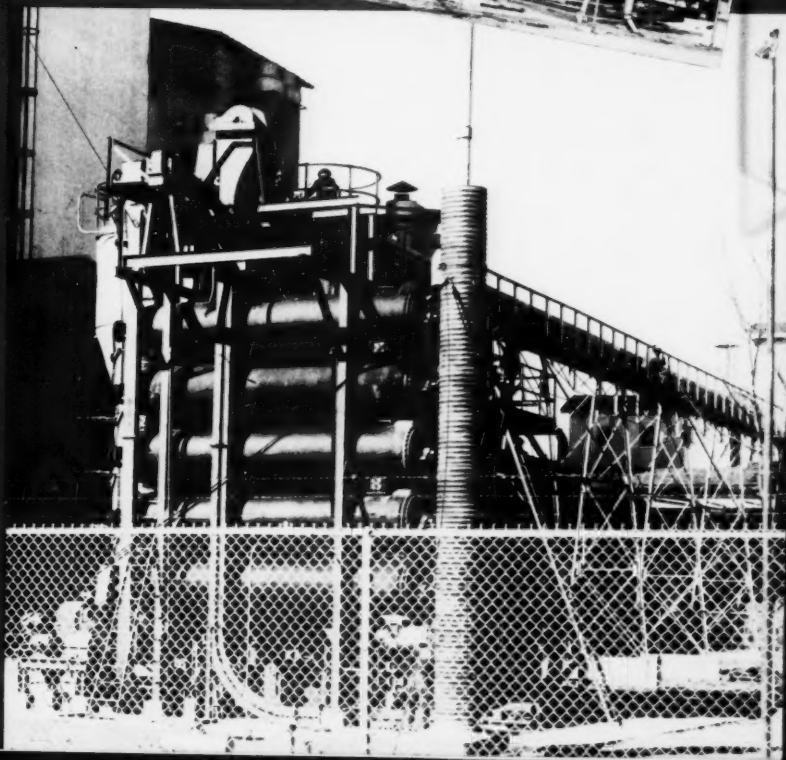
MANKATO, MINN.

Here's a 150-200 ton 24-hour unit that began its operation by the Honeymead Products Co. in the spring of 1949.



DELPHOS, OHIO,

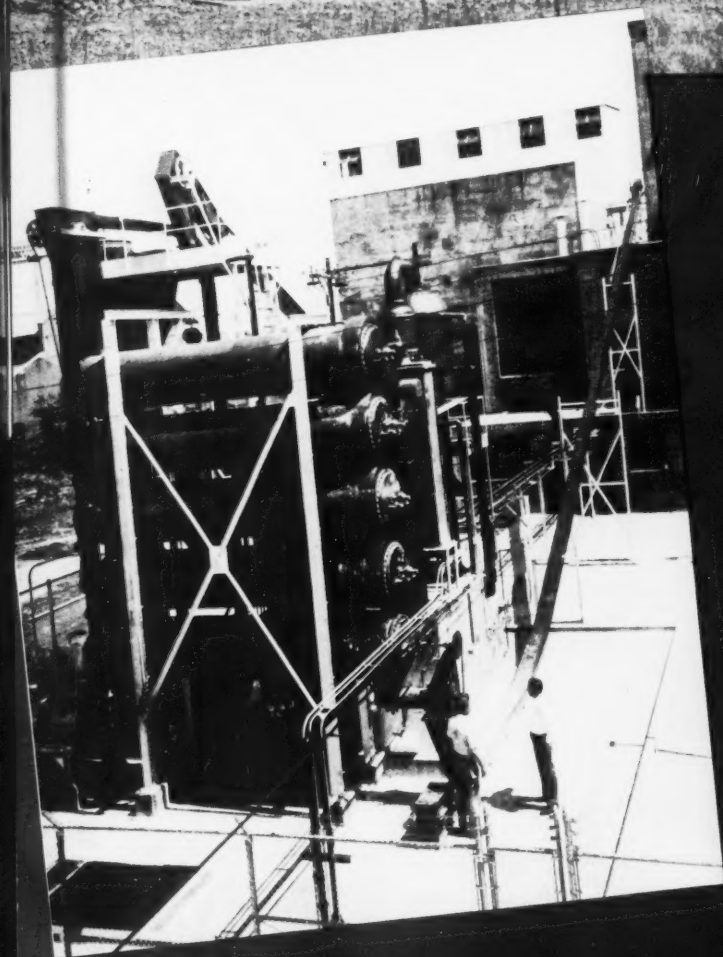
also has one of the latest ANDERSON Extraction Unit Constructions, and started operation early in 1949. It is owned by Delphos Grain and Soya Products Co.





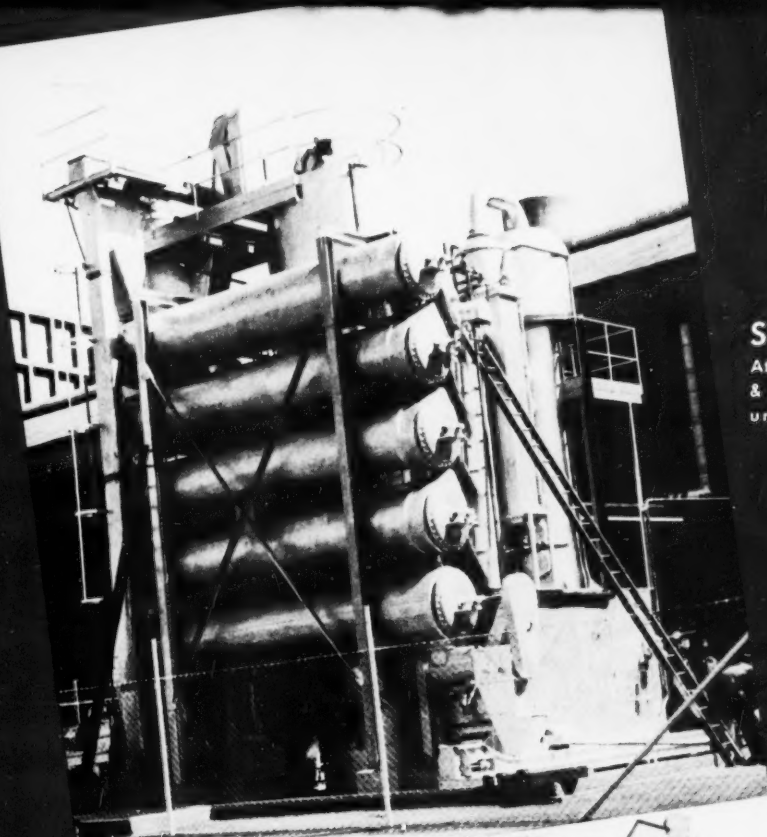
HENDERSON, KY.

Ohio Valley Soybean Co-operative began their operation early in 1949.



LOUISVILLE, KY.

In July 1948, the Louisville Soy Products Company put this unit into operation.

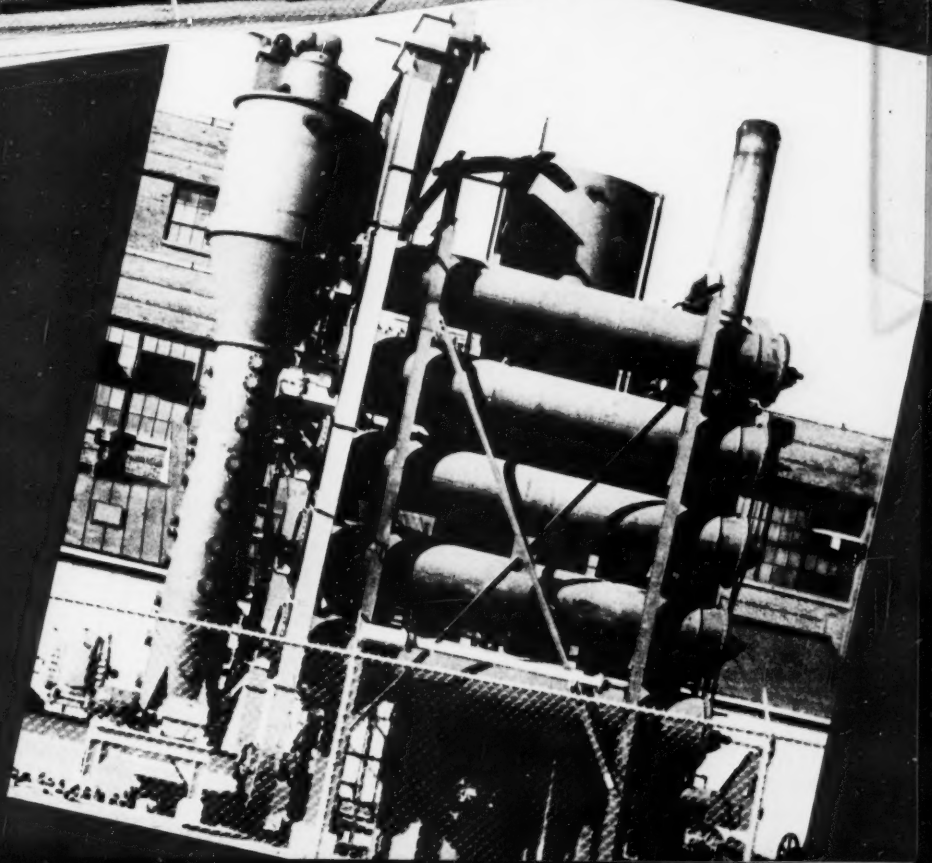


SOUTH AFRICA

At Johannesburg, the Union & Congo, Ltd., opened up this unit in February of 1949.

RED WING, MINN.

Still another Solvent Extraction Unit is now at work in the Pittsburgh Plate Glass Co. plant at Red Wing, Minn.



.... AND THERE ARE MORE COMING

The installations shown on other pages of this portfolio are indicative of the greater use of the ANDERSON Solvent Extraction Units, not only for soybeans but for other types of oleaginous seeds and nuts. There are more coming. At the moment a new installation is almost finished at Lexington, Ohio, and still another is on a boat on its way to Italy. Others are in the making.

If you are interested in installing a complete new solvent extraction plant, changing your present methods or adding to your present capacity, we would suggest that you write us a letter giving us as much information as possible and let us give you the benefit of our experience on these solvent extraction units when you are in the planning stage for new operations.

Please remember that The V. D. Anderson Company not only manufactures Solvent Extraction Units but also has turned out thousands of ANDERSON Expellers and Pre-Expellers for use in exclusive Expeller installations and Exsolex Process. Our facilities are such as to supply any milling operation with all types of equipment necessary for the efficient and economical production of vegetable oils and oil meals.

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IN THIS ISSUE		page
Activities of Your Association		12
Growers		12
Soybeans in Deep South		12
Index of Advertisers		28
29th Annual Convention		30
Report of President		31
ERSEL WALLEY		
Honorary Life Members		36
Soybeans Are Worth More		37
World Trade		
Soybeans in the World Fats, Oils Picture		38
DR. JULIUS HENDEL		
World Food Round-Up		41
STANLEY ANDREWS		
Soybeans Abroad		
Soy Flour in European Occupied Areas		44
R. G. BRIERLEY		
Soybeans in the Food Economy of Germany		46
WILLIAM BENING		
Research		
Research on Flavor Stability of Soybean Oil		48
J. C. COWAN		
What Do Synthetic Emulsifiers		
Mean to Soybeans?		50
OSCAR SKOVHOLT		
Producers		
Field Program of the American		
Soybean Association		52
PAUL C. HUGHES		
Root Rots of Soybeans		54
M. F. KERNKAMP		
Soybeans in Ontario		56
C. W. OWEN		
Soybeans and the Fertility Level		58
G. M. BROWNING		
What Inoculation Does for Soybeans		62
LEWIS W. ERDMAN		
Weed Control in Soybeans		64
R. G. ROBINSON		
Industry		
Minneapolis—the World's Cash Grain Market		68
A. M. HARTWELL		
Government		
The 1949 Outlook for Soybeans		70
GEORGE L. PRICHARD		
Soybean Standards		74
W. L. INGLES		
Soybrands Division Mill		76
Report of Secretary-Treasurer		79
GEO. M. STRAYER		
Resolutions		83
Soy Product Tests Dairy Law		91
1949 Soybean Festivals		92
New Woodson-Tenent Laboratory		93
Discuss Why of Market Decline		94
Crop Report		96
Publications		104
Grits and Flakes		106
Washington Digest		114
PORTER M. HEDGE		
In the Markets		117
Letters		130
Press		130



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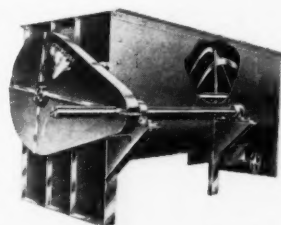
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These trough ends are made of plate steel bodies with inter-changeable and detachable ball or babbitt flange bearings. These trough ends were designed for longer life, quicker, easier and more economical change-overs. On these units only the hub bearing wears out leaving the trough end unharmed. Therefore in your change overs the price of the hub bearings are only about one half the price of the old solid piece trough ends. Our counter shaft trough ends are of this same design. Shipments on both units can be made from stock. We manufacture a complete line of screw conveyors and accessories and shipments can also be made from stock.

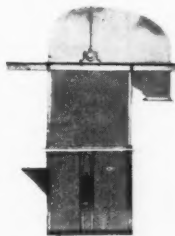
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Specifications**

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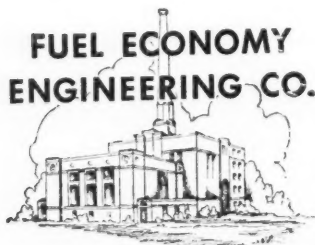
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INDEX OF ADVERTISERS

Agricultural Laboratories, Inc.	127	Jeffrey Mfg. Co.	3
Allied Mills, Inc.	132	Kalo Inoculant Co.	128
Allis Chalmers Manufacturing Co.	5	Kansas Soya Products Co., Inc.	98
American Bag Co.	97	Kewanee Machinery & Conveyor Co.	80
American Cyanamid Co.	114	J. C. Kintz Co.	128
American Mineral Spirits Co.	11	Laboratory Construction Co.	111
V. D. Anderson Co.	6	Law & Co.	119
Arco Bag Co.	78	V. A. Lessor & Co.	128
Arid-Aire Manufacturing Co.	72	Link-Belt Co.	100-101
Wm. H. Banks Warehouses, Inc.	107	Marietta Concrete Corp.	76
Barnard & Leas Co., Inc.	105	Massey-Harris Co.	95
Barrow Agee Laboratories, Inc.	117	Mente & Co., Inc.	126
Bemis Bro. Bag Co.	13	Merrill Lynch, Pierce Fenner & Beane	71
Black, Sivals & Bryson, Inc.	59	Metal Hard-Surfacing Co.	97
Blanton Co.	16	Midwest Burlap Bag Co.	86
Blaw-Knox Co.	73	Midwest Steel Products Co.	76
Borden's Soy Processing Co.	90	Minneapolis & St. Louis R. R.	15
Brode Corp.	128	Minneapolis-Moline Power Imp. Co.	113
Burrows Equipment Co.	120	Nitragin Co.	53
Cargill, Inc.	94	Phillips Petroleum Co.	77
C. G. Carter	88	Pillsbury Mills, Inc.	93
J. I. Case Co.	43	Prater Industrial Products	99
Central Soya Co., Inc.	127	Puritan Mfg. Co.	3
Chase Bag Co.	60	Quincy Soybean Products Co.	128
Columbian Steel Tank Co.	10	Ralston-Purina Co.	107
Corn States Hybrid Service	103	Riechman-Crosby Co.	104
Crown Bag Co.	128	Roach Soybean Mills, Inc.	124
Crown Iron Works Co.	98	Roesling Monroe & Co.	106
Cypress Land Farms	102	Ross & Rowe, Inc.	118
Dannen Mills	120	Seedburo Equipment Co.	18
Decatur Soy Products	91	Sewrey-Gartside Co.	96
Delphos Grain & Soya Products Co.	126	H. M. Shanzar Co.	116
Albert Dickinson Co.	14	Sioux Soya Mills	117
Dickinson Brothers Co.	115	Skelly Oil Co.	2
Robert L. Dortch Seed Farms	126	Soybean Digest	82
Eikenberry Construction Co.	124	Spencer Kellogg & Sons, Inc.	34-35
Esmueller Co.	69	D. R. Sperry & Co.	121
Filter Fabrics, Inc.	83	Southeastern Products Co.	66-67
Filter Paper Co.	86	Soy Rich Products Co.	110
Ford Motor Co.	125	A. E. Staley Mfg. Co.	29
Fredman Bag Co.	84	St. Louis Mill Equipment Co.	81
French Oil Mill Machinery Co.	129	St. Paul Terminal Warehouse Co.	4
Ft. Worth Steel & Machinery Co.	123	St. Regis Paper Co.	87
Fuel Economy Engineering Co.	28	Swift & Co.	63
Fulton Bag & Cotton Mills	17	Thomson Phosphate Co.	97
Funk Bros. Seed Co.	7	Tillotson Construction Co.	74
General Mills, Inc.	79	Toledo Soybean Products Co.	97
Glidden Co.	131	Mrs. Tuckers Foods, Inc.	9
Greutker, Inc.	126	Urbana Laboratories	122
Guillory Sales Co.	128	Valley Farms Co.	102
J. W. Hance Mfg. Co.	91	Valley Foundry & Machine Works, Inc.	116
Hart-Carter Co.	122	B. I. Weller Co.	118
Jacob Hartz Seed Co., Inc.	112	Western Burlap Bag Co.	75
Haynes Soy Products, Inc.	119	Western Soybean Mills	117
Hemphill Soy Products Co.	97	Wilbur Ellis Co.	92
Honeymead Products Co.	124	K. I. Willis Corp.	3
R. R. Howell Co.	108	The Wolf Co.	109
Humphrey Elevator Co.	85	Woodbach, Inc.	128
Independent Silo Co.	92	Woodson-Tenent Laboratories	8
Industrial Machinery Co., Inc.	27	Wurster & Sanger, Inc.	70
International Nutrition Laboratory, Inc.	89	Zimmerman Alderson Carr Co.	130
Iowa Milling Co.	84		

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FEED DIVISION

PAINESVILLE, OHIO

29th Annual Convention

AMERICAN SOYBEAN ASSOCIATION



About 600 soybean growers, seedsmen, grain handlers, processors and others attended the 3-day 29th annual session of the American Soybean Association at Hotel Nicollet in Minneapolis and the University Farm, St. Paul, Sept. 6-8.

John W. Evans, Easthome Farm, Montevideo, Minn., was elected president, succeeding Ersel Walley, Walley Agricultural Service, Fort Wayne, Ind.

Evans has been a member of the board of directors since 1946 and was elected vice president in 1948. Walley retired after 2 most fruitful years, which had seen the setting up of the Association's field program and an unprecedented amount of legislative activity carried on by him and other members of the Association. Few ASA presidents have given so freely of their time.

Jake Hartz, Jr., Jacob Hartz Seed Co., Stuttgart, Ark., was elected vice president, succeeding Evans in that office. Geo. M. Strayer, Strayer Seed Farms, Hudson, Iowa, was reelected secretary-treasurer.

Directors elected were:

For 1 year: Calvin Heilman, Kenton, Ohio, succeeding W. G. Weigle, Mansfield, Ohio, and H. I. Cohn, Sr., Valley Farms Co., St. Louis, Mo.

For 2 years: C. G. Simcox, Assumption Cooperative Grain Co., Assumption, Ill., succeeding Frank Garwood, Stonington, Ill.; Chester Biddle, Biddle Farms, Remington, Ind., succeeding J. B. Edmondson, Danville, Ind.; Ersel Walley, re-elected; Howard L. Roach, J. Roach Sons, Inc., Plainfield, Iowa, re-elected; John Dries, Saukville, Wis., re-elected; and Jake Hartz, Jr., succeeding Jacob Hartz, Sr.

Both Edmondson and Hartz have seen a long period of service on the board dating back to considerably earlier days in the Association. Edmondson has served as vice president, secretary and treasurer. Hartz as vice president.

With Cohn's election Missouri now has two directors.

A number of Minneapolis groups

and firms gave freely of their time and effort to make the convention a huge success. These included the Minneapolis Convention Bureau and Chamber of Commerce and the local processing firms.

Dr. J. W. Lambert of the agronomy department of the University of Minnesota was in charge of the field trip to University Farm and was assisted by members of the agronomy staff in showing off the variety and disease plots.

The usual informal smoker was held the evening preceding the convention and a number of key people attended a "policy" meeting with the board of directors.

Three hundred and seventy-six people bought tickets to the annual banquet to take part in group singing led by W. D. Peters of General Mills, Inc.; hear the Minneapolis Aquatennial Quartet; see the presentation of honorary life memberships by Minnesota's Governor Luther Youngdahl; and hear Stanley Andrews' forceful talk, "European Roundup."

The new ASA board of directors. Standing left to right: R. H. Peck, River Canard, Ontario; Howard L. Roach, Plainfield, Iowa; Chester Biddle, Remington, Ind.; Ersel Walley, Fort Wayne, Ind.; John Dries, Saukville, Wis.; Leroy Pike, Pontiac, Ill.; and C. G. Simcox, Assumption, Ill. Seated, left to right: Geo. M. Strayer, Hudson, Iowa; Jake Hartz, Jr., Stuttgart, Ark.; John W. Evans, Montevideo, Minn., and Calvin Heilman, Kenton, Ohio.





Left, ASA Business Manager Geo. McCulley registers in Arthur Large of Rock Island Lines, Chicago, and Calvin Heilman (right) Kenton, Ohio. Heilman was elected a new Ohio director. At far left is Mrs. McCulley. Right, three directors and manager of Farmers Cooperative Co., Duke, Iowa, examine the literature in one of the booths. Left to right, Horace D. Brown, Manager C. M. Gregory, Russell Meewes and Albert Lauterbach. At right, Imam Mahmud, Pakistan, and James T. Ian of China, examine an increase field of Kabott during the field trip. Mahmud is a student at Purdue University. Ian is taking a postgraduate course at the University of Pennsylvania.

The reception by Cargill, Inc., preceding the banquet drew a big crowd, and a large number toured the Archer-Daniels-Midland Co. research laboratories and partook of the smorgasbord lunch on the ADM lawn.

The trend toward larger attendance by women continued with possibly the largest number this year in ASA history. They attended the Dayton's Store style show sponsored by Pillsbury Mills, and a large group visited the Betty Crocker Kitchen of General Mills, Inc. Many also took part in the field trip and the ADM smorgasbord luncheon.

There was a record number of exhibits by firms serving the industry. Their variety and extent have never before been equalled.

A number of convention attendants availed themselves of the invitation by the Minneapolis Grain Exchange to visit the Exchange and watch the trading on the Exchange.

Following were the committees in charge of the 29th convention:

Nominations: Jacob Hartz, Sr., Stuttgart, Ark., chairman; Frank Garwood, Stonington, Ill., Dr. Lewis Saboe, Columbus, Ohio; John Sand, Marcus, Iowa; H. I. Cohn, St. Louis, Mo.

Resolutions: Howard Roach, chairman, Plainfield, Iowa; O. H. Acom, Wardell, Mo.; W. M. Scott, Tallulah, La.; Walter McLaughlin, Decatur, Ill.; R. H. Peck, River Canard, Ontario; K. E. Beeson, Lafayette, Ind.

Cooperation with Foreign Relief Agencies: John Dries, chairman, Saukville, Wis.; Leroy Pike, Pontiac, Ill.

Awards: John W. Evans, Montevideo, Minn., chairman; J. B. Edmondson, Danville, Ind.; J. W. Calland, Decatur, Ind.

Annual Report of the President

Another year has been written into the history of the American Soybean Association. While it has been a year of modest accomplishment yet it has demonstrated the inherent weaknesses in our organization and our efforts. More important, however, is the fact that it has demonstrated that our cause is worth while and the value of our product can be permanently established.

Your officers have stressed the theme during the year that "Soybeans Are Worth More Money." At this point it should be explained that this does not indicate in any way that the local handlers, traders or processors have paid less for beans than they were able to based upon the prices which they could receive for products made therefrom. Anyone who watches the current price of soybean meal and soybean oil can determine that fact.

The fact that the American Soybean Association is stressing this theme should not make any handler or processor feel in any way on the defensive. The theme has been used solely to stress the fact that the potential value of the soybean is greater than is reflected in the present or past price because traditionally the American soybean has not been utilized to its highest potential values.

Again and again we should remind the public that the soybean, as it comes from the harvester, contains 30 percent to 35 percent of edible nutritious protein — more than the conventional dairy feed supplement. Each bushel contains

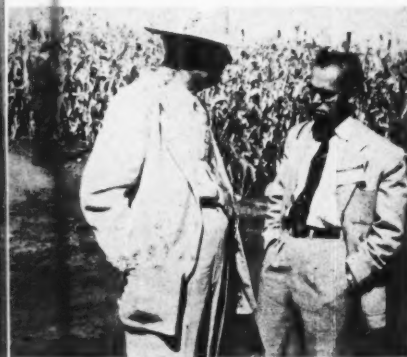


Center picture, two agronomists at the smoker. Dr. F. Dimmock of the Dominion Experiment Station, Ottawa, (left) and J. W. Lambert of the University of Minnesota.

Bottom picture, Archer-Daniels-Midland's R. G. Brierley (left) finds time during the convention to brief J. L. Carter of the U. S. Regional Soybean Lab., and ASA Sec.-Treas. Geo. Strayer, who were about to leave for Europe on a mission for ECA., Brierley was abroad in 1948.



S. J. Oberhauser, agricultural agent for the Milwaukee Road, Minneapolis, and Paul C. Hughes, ASA field director, converse during the field tour.



Jacob Hartz, Sr., Stuttgart, Ark., compares notes with J. G. Silva of the Instituto Agronomico, Brazil, near the corn plots at University Farm. Silva is taking graduate work at the University of Illinois.



This group paused near a booth between speeches: John Dries, ASA director, Saukville, Wis.; USDA's W. J. Morse, Beltsville Md.; and Geo. M. Briggs, University of Wisconsin.

8 to 10 pounds of edible oil—golden in color and rich in food value. That same bushel of soybeans contains three times as much protein, 10 times as much fat, and nearly three times as much valuable minerals as a bushel of wheat. It contains four times as much fat, four times as much edible protein, and nearly four times as much valuable minerals as a bushel of corn. The price which the grower receives for soybeans is dependent on the price which the processor can receive for the end products. Any effort which adds 1 cent per pound to the price of oil, adds 8 to 10 cents per bushel to the value of soybeans to the processor. This explains the effort of your Association to attempt to get every possible discrimination removed against the use of soybean oil and any other soybean products.

Considerable progress has been made in this direction during the past year. Several states have removed the discrimination against yellow margarine made from soybeans and the chances are greatly in favor of federal legislation being passed. Your Association in this effort is duly grateful for the co-operation which we have received this year from several of the processors who have been sold on this point of view and who at their own expense and on their own time worked with us in our efforts to remove these discriminations.

At the last annual meeting your Association adopted the policy favoring the export of a minimum of

(Continued on page 78)

On the opposite page you see some of the people and activity of the 29th convention at Hotel Nicolet. Top left, friends relax and visit before the morning session. They are Mr. and Mrs. Robert H. Peck, River Canard, Ontario; and Mrs. and Mr. C. W. Owen, Harrow, Ontario. Peck is ASA director from Canada. Owen was a convention speaker.

Upper right, two growers become acquainted at the disease plots during the tour. You see Raymond Reiterman and son Gary, Mount Sterling, Ohio, and Richard E. Hall, Potomac, Ill.

In picture second from top at left, Mr. and Mrs. C. R. Acord, Acord Grain Co., Kansas, Ill., read market quotations on board near registration desk. At right, four producers become acquainted in lobby as convention opens: Anthony Fisher, Ripley, Tenn.; Albert Dimond and son Bill Dimond, Lovington, Ill.; and H. V. Seeburger, St. Charles, Mo.

Left, second from bottom, four processors visit near a booth: R. G. Houghlin, president National Soybean Processors Association, Chicago; R. B. Williams, Buckeye Cotton Oil Co., Louisville, Ky.; Walt Flumertelt, General Mills, Inc., Minneapolis; and Donald B. Walker, Halston Farina Co., St. Louis, Mo. Right, a group at the University Farm variety plots. You see two of the buses that transported the crowd.

Bottom left, Archer-Daniels-Midland Co. is host at smorgasbord lunch on lawn near the ADM research laboratory. Right, Howard L. Roach, J. Roach Sons, Plainfield, Iowa, chats with Dr. L. K. Arnold, Iowa State College. Roach is using in his soybean mill the trichloroethylene process developed by Arnold.

All pictures read from left to right. Photos in this section are by Soybean Digest.

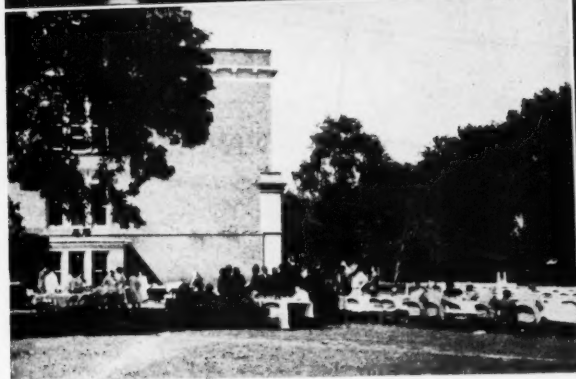


Twosomes at the Monday evening smoker: left to right, J. R. McIntosh, Meadville, Mo., producer; Ashleigh P. Boles, agricultural agent Missouri Pacific Railroad, St. Louis, Mo.; Harold K. Conn, Parkersburg, Iowa, producer; and Arthur W. Large, agricultural agent Rock Island Railroad, Chicago.

SOYBEAN DIGEST



CHICAGO				
	CORN	SOYBEANS	LARD	
Time	Sept	Dec	Sept	Dec
AM	12.5	2.34	2.33	1.12
NEW YORK				
	SOYBEAN OIL	COFFIN SEED OIL		
AM	SPOT	Sept	Dec	
	12.5	1.36	1.36	
MEMPHIS				
	SOYBEAN MEAL			



SPECIALIZING in Soybean Processing

Selling American Soybean Products EVERYWHERE

SPENCER KELLOGG and SONS, Inc. are converters of soybeans into materials for industry. Our operation is world wide. Customers abroad as well as at home know that the name "Spencer Kellogg" identifies the best in American soybean oils, flours and meals. Our sales effort is the development of the widest, most permanent markets for soybean products by all the possible means. It is conducted through twenty-seven offices in the United States — all striving to expand the use and value of soybeans.

SPENCER KELLOGG AND SONS, INC.
BUFFALO 5, N. Y.

The First Name in Vegetable Oils

BLUE FLAGS INDICATE
SPENCER KELLOGG SALES OFFICES



SPENCER KELLOGG in Soybean Land

Each year Spencer Kellogg and Sons buy beans equal to the total production of many thousands of farms, to operate our mills at Minneapolis, Des Moines, Chicago, Decatur, Bellevue and Buffalo.

MINNEAPOLIS
MINN

DES MOINES
IOWA

CHICAGO, ILL.

DECATUR, ILL.

BELLEVUE, OHIO

BUFFALO, N. Y.

PHILADELPHIA

PITTSBURGH

BALTIMORE

RICHMOND

OMAHA

KANSAS CITY, MO.

ST. LOUIS

INDIANAPOLIS

CINCINNATI

LOUISVILLE

NASHVILLE

KNOXVILLE

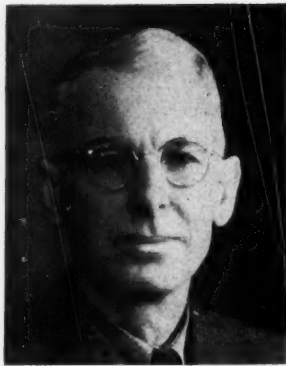
MEMPHIS

ATLANTA

DALLAS

NEW ORLEANS

SPENCER KELLOGG
SOYBEAN PRODUCTS
Protein Meals
Flour
Shortenings
Salad Oils
Industrial Proteins
Paint Oils
Varnish Oils



Left to right, Keller E. Beeson, Jacob Hartz, Sr., E. F. Johnson.

HONORARY LIFE MEMBERS 1949

Keller E. Beeson, Lafayette, Ind.; Jacob Hartz, Sr., Stuttgart, Ark.; and E. F. Johnson, Delphos, Ohio, were chosen honorary life members of the American Soybean Association at its 29th convention in Minneapolis, bringing the total number of life members to 11.

Awards were presented by Luther Youngdahl, governor of Minnesota, at the annual banquet.

Members of the awards committee were John W. Evans, chairman, Montevideo, Minn.; J. B. Edmondson, Danville, Ind.; and J. W. Calland, Decatur, Ind.

Life members previously elected are: W. J. Morse, Bureau of Plant Industry, Beltsville, Md.; W. L. Burlison, University of Illinois, Urbana, Ill.; I. C. Bradley, Allied Mills, Inc., Taylorville, Ill.; J. C. Hackleman, University of Illinois, Urbana, Ill.; G. G. McIlroy, Farm Management, Inc., Irwin, Ohio; C. M. Woodworth, University of Illinois, Urbana, Ill.; David G. Wing, Mechanicsburg, Ohio; and J. B. Edmondson, Danville, Ind.

Keller E. Beeson

Keller E. Beeson was born March 18, 1894, at Columbia City, Ind. He received his education at Columbia City High School, Wabash College, Winona College and Purdue University where he took his M. S. degree in agriculture in 1927.

He was married in 1925 to Monelle Baker. He is the father of two children, John Frederick, a 1948 Purdue University graduate, and Brenton Phillips.

Mr. Beeson was a school teacher from 1912 to 1919. He was Indiana state leader of barberry eradication from 1922 to 1924. He has been extension agronomist at Purdue University since 1924.

He has been the secretary of the Indiana Corn Growers Association since 1929. Along with other leaders of the Association he developed and promoted the Indiana Two-Acre Soybean Yield Contest.

He is past president and secretary of the American Soybean Association. He has held the same offices in the International Crop Improvement Association.

He has had charge of the plans and programs for meetings of the American Soybean Association held in Indiana.

Mr. Beeson has been the leader of the soybean project in the Purdue University extension program that includes variety demonstrations, meetings and conferences. He is the author of numerous University bulletins and articles dealing with soybean production.

He has been the leader in planning the program of the annual corn and soybean field day held at the Purdue Soils and Crops Farm. He cooperated with the railroads in run-

ning the educational "Soybean Special" trains through Indiana.

Before the days of the Soybean Digest, Mr. Beeson pioneered the preparation of the printed report of the annual meeting, which was ready for distribution at the meeting. He also started the mimeographed circular letters that went out at intervals to the membership. These were forerunners of the Digest.

Jacob Hartz, Sr.

Jacob Hartz, Sr., was born at Racine, Wis., on April 4, 1888, the son of German immigrants. He was one of eight children. Because of his father's poor health he was forced to leave school after completing the eighth grade.

At the age of 20 he went to work as a traveling salesman for the P & O Plow Co. and spent several years in Arkansas.

In 1917 Mr. Hartz moved to Wheatley, Ark., and went into the hardware business. In 1924, he moved to Stuttgart, Ark., his present home. There he joined his father and A. R. Thorell in the Hartz-Thorell Supply Co. which grew and prospered and became the leading farm machinery business in the state.

It was early in this business that Mr. Hartz became interested in soybeans and started on the journey that was to make him one of the

(Continued on page 35)

SOYBEANS ARE WORTH MORE



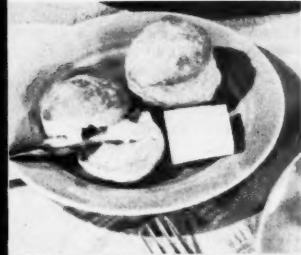
LYWOOD GLUE



PLASTICS



EDIBLES



MARGARINE



OIL MEAL



SOY SPROUTS



PAINT

Up-to-now we have habitually undersold soybeans. The market price we obtain does not represent their true worth.

At long last we have begun to consider these facts:

1—Soybeans contain up to 35 percent of nutritious protein, more than the usual dairy supplement contains.

2—Soybeans contain three times as much protein, 10 times as much fat and nearly three times as much minerals as wheat.

3—Soybeans contain four times as much fat, four times as much protein and nearly four times as much minerals as corn.

4—Soybeans are converted to so many food, industrial and medical uses the mere listing would be tiresome. And the list grows daily.

Since Pearl Harbor the high-value usage of soybeans has mushroomed. But progress in the laboratory has been more rapid than in the market place where buyer and seller still haven't forgotten the days when soybeans were considered a second-rate product.

To realize a price for soybeans based on their true worth requires a many-pronged campaign.

It requires education. People in all walks of life must be made familiar with the tremendous potentialities of soybeans.

It requires legislation. We must beat down the barriers to full and free markets for soy products.

It requires research. Weaknesses of soybeans as a crop and product must be overcome. Scores of new uses must be developed.

It requires salesmanship, the intelligent efforts of all to sell this marvelous crop . . .

A necessary program, and not an impossible one if everybody in the field and elevator and factory lends himself to the job.

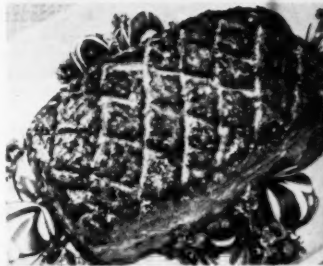
It is to this program that the American Soybean Association is dedicated. With your help it will succeed. You are the Association.



WHIPPING AGENT



SHORTENING



SOY FLOUR



JULIUS HENDEL

WORLD TRADE

Soybeans in the WORLD FATS, OILS PICTURE

By DR. JULIUS HENDEL

Vice President, Cargill, Inc.

THE SECRETARY of your Association has asked me to discuss the possibility of continued foreign markets for United States soybeans. It has been my good fortune to have attended the International Congress of oilseed crushers held recently in Switzerland. Many informative and interesting papers were presented there.

WHAT IS THE WORLD FATS AND OILS PICTURE?

1. Statistically there is a big demand for fats and oils all over the world.

2. The amount that will enter foreign trade will depend entirely on government policies, particularly Washington.

WHAT IS THE STATISTICAL SITUATION?

Let us review the general fats and oils situation. There is great interchangeability and substitution in the use of various oils. What is true with oils in general is also true with regard to soybeans in particular.

A review of the world situation shows that there is an extreme world shortage of fats and oils. Statistically, there is a large demand which must go unsatisfied. The shortage is particularly acute in Europe.

The deficit of world exports for 1949 is estimated at 1,300,000 long tons of oil as compared with 1938. The deficit of European production for 1949 compared with 1938 is estimated at 600,000 long tons. Adding these two factors together we arrive at a world statistical shortage of 1,900,000 long tons for 1949. This is, indeed, a large hole to be filled.

WHAT HAS HAPPENED IN EUROPE?

In Europe proper, 1948 estimates indicate an actual increase, as compared with the previous year, in the production of animal fats and rapeseed. The increase

was, however, more than offset by a poor olive crop in Southern Europe.

In this connection, I think it is well to bear in mind that local consumption of an agricultural commodity which is used for food or feed is generally accelerated with the distance from the market. This is true in the case of olive oil. A short crop of olives in the Mediterranean Countries will reduce consumption of oil rather than increase imports. On the other hand, a large crop of olives will result in greater local consumption, and will not mean a corresponding increase in exports.

WHAT HAS HAPPENED TO CRUSHING CAPACITY?

During the war there was a marked increase in crushing capacity in the oilseed producing countries. In fact, the world crushing capacity is now far in excess of total prewar oilseed production. There is now and will be for a long time to come, a heavy demand for all kinds of oilseeds by the crushers. If hard currency exchange were adequately available at present, oilseed production would have to increase in order to keep the present crushing capacity busy.

WHAT ARE THE PRINCIPAL SOURCES OF PRESENT WORLD EXPORTS?

The countries which had normally supplied Europe are not now exporting at prewar levels. The decline in shipments from Manchuria, China, Indonesia, Argentina, and to a lesser extent India, Malaya and the Pacific Islands has contributed to the world shortage in 1948 as compared with 1938. There was a slight increase in shipments from the United States, Canada and the Belgian Congo.

The 1949 world exports are estimated at about 300,000 long tons above 1948. This increase will probably come largely from African colonies, Indonesia, Brazil, and to a lesser extent from the Philippine Islands and North America. Africa will probably supply about the same quantity of copra and peanuts in 1949 as in 1948, but it is unlikely to ship as large a quantity of palm or palm kernel oil.

The progress of the New British East African peanut enterprise is not known, and it is still too early to make a good estimate of the amount that will be produced and shipped.

Palm kernel shipments from Indonesia and Malaya may recover to prewar levels, but it is difficult to say how much copra can be spared.

Other Pacific areas, naturally, will recover their prewar production levels before long, but they will not ship out as large a percentage because of labor going into better paid occupations.

The situation in regard to Argentina presents an entirely different set of circumstances. This country has on hand large stocks of surplus edible and inedible oils and oil meals. It seems reasonable to suppose that sooner or later these stocks will reach world markets, but it is quite impossible to say when, inasmuch that determination must be made almost exclusively on the basis of political considerations. The recent Argentine-British trade agreement is an indication of how Argentina is apt to trade in the future.

The situation in regard to exports from most countries is further clouded by local politics and exchange problems. For example, in the case of Indonesia and Malaya, shipments of copra will be affected by the increase or decrease in the supply of rice, as the latter commodity is accepted by the natives as the medium of exchange. Rice also enters into many of the barter arrangements with those areas.

WHY ARE EXPORTS FROM SURPLUS PRODUCING COUNTRIES BELOW PREWAR?

Many of the countries which supplied the prewar surplus of fats and oils will consume a larger percentage of their production domestically. In the first place, the increase in population requires larger quantities, and secondly standards of living have been improved, and a smaller proportion of the population is being devoted to agriculture. As an example, production of fats and oils in India and Egypt will probably surpass prewar levels. However, unless trade balances require accumulation of exchange, it is doubtful if much or any will be exported. Furthermore, it is likely that exports from surplus countries will be made in the form of oil rather than oil bearing materials, because of increased crushing capacity.

WHAT DID THE AMERICAS DO?

The North American, and particularly the United States contribution to world shipments of fats and oils is worthy of special mention. Prior to World War II, the United States was a large net importer of fats and oils. We have succeeded in exporting large quantities during the last few years. Our farmers have done a remarkable job of increasing the domestic production of fats and oils. This contribution to both the war effort and the peace effort was due in no small measure to our producers of soybeans.

HOW DO DETERGENTS AFFECT THE SUPPLY?

The development of detergents and their substitution for animal fats and vegetable oils in soap making has had a direct effect on the overall demand. The United States consumption of fats and oils in the manufacture of soap declined from 1,660 million pounds in 1947 to 955 million pounds in 1948. This reduction of about 10 percent is due primarily to the increase in the use of detergents.

Detergents are not, of course, exactly new. Their growth, however, was rapid during and since the last war. In 1945 the United States production amounted to 125,000 tons, and production in 1949 is estimated at 270,000 tons. Plans call for an increase in plant capacity to 450,000 tons annually by 1952. The rate of growth, however, will diminish as the prices of fats and oils, particularly tallow, decline or stabilize at a lower level.

It is interesting to note that even in England the increase in the use of detergents has shown a rapid rise. This has been due largely to the fact that they are entirely ration-free, as contrasted with "austerity" restrictions in the use of fats and oils in the manufacture of soap.

As to the future of detergents—they are here to stay. They possess marked advantages over soaps in hard water areas, and are especially useful in washing cold surfaces, such as motor cars, streets and even vegetables.

It has been pointed out that lower costs of fats and oils used to make soap might prove to be too strong a competitive factor for further expansion of detergent production. However, we must bear in mind that cost of raw materials is relatively small compared with the costs of marketing, including advertising. Once a brand has been introduced and consumer acceptance has been established, it is highly unlikely that the product would be withdrawn from the market.

In summarizing the world situation, it seems apparent that for some time to come there will be a large gap between the needs of consuming countries and the available exportable surplus. The statistical supply and demand situation will not, within the next 5 years, show a per capita consumption equal to the prewar level.

I have been discussing supply and demand from the statistical angle. To assume that such facts portray effective demand, however, is unrealistic. We are inclined to underestimate the ability of

people to do without, and forget that once the period has passed without exports it is not likely that any considerable portion of the unsatisfied demand will be accumulative. Most of that quantity will simply remain in the surplus producing areas.

Let us re-emphasize that *statistically there is a big demand for fats and oils all over the world, but the amount that will enter foreign trade will depend entirely on government policies, particularly in Washington.*

HOW MUCH THEN WILL ENTER WORLD TRADE?

The amount of fats and oils that will enter world trade will depend on:

1. The amount of dollars that ECA will allocate for: a. United States purchase. b. Purchase in other countries.
2. The portion of free dollar exchange allocated for purchase of oil. This depends on the amount of free dollar exchange the buying countries can accumulate through normal transactions, including: a. Exports to the United States. b. Payments for services in dollars. c. Amount of gold reserves or new mining. d. Private loans with adequate guarantees. e. Other transactions.

The amount of exchange that foreign countries can accumulate naturally is the paramount factor. It requires a revamping of our behavior. There is very little free exchange available in the consuming countries at present. The only way they can accumulate dollar exchange is:

1. By willingness of dollar countries to increase imports.
2. By adopting a realistic attitude in providing the things dollar countries need: a. Cheaper production. b. Streamlined distribution through modern methods of packaging, advertising and sales promotion.

The role that the Marshall Plan (ECA allocations) will play in stimulating foreign trade is of considerable importance. We must not, however, assume that it will solve the whole problem. *The quantity purchased with free dollars will be very small.*

Remove Barriers

The public at large, and the business community in particular, must encourage governments to remove wherever possible the barriers to international trade such as quotas, price restrictions and embargoes. Above all, governments must seek an early solution to the currency problem, looking to the establishment of free foreign exchange markets. Without free exchange, the needs of deficiency countries cannot be supplied by the exporting areas. Without free exchange, the statistical shortage cannot become the effective demand it should, backed by buying power.

The lack of fluidity and convertibility of foreign exchange has actually created two separate markets:

1. A hard currency market with a surplus of low priced fats and oils.
2. A soft currency market with a high price level and in great need of oils.

Such countries as the United States, Canada and the Argentine have large surpluses that cannot be marketed. Conversely, in the sterling area, the same oils will sell at two to three times as high when payment is in sterling rather than dollars.

The exportable surplus of fats and oils for 1949 is estimated at 1,500,000 tons, while the deficiency in importing areas is about 3 million to 4 million tons.

WHAT BROUGHT THIS SITUATION ABOUT?

Whenever a country is at war, the important objective in the mind of the government and the people is victory, regardless of cost. Naturally, under these conditions, changes are made in the production pattern, with subsidies for unnatural production.

HOW ARE WE GOING TO REMEDY THE SITUATION?

It is very discouraging to note that the trend toward free international trade continues to meet opposition on all sides. This is true in spite of the apparent desire for and talk of freer commerce among nations.

WHAT ARE THE OBSTACLES?

Some of the more important stumbling blocks to greater freedom in foreign trade are:

1. Deficiency of hard currency exchange.
2. Insistence on the part of governments to continue dealing in commodities.
3. Reluctance on the part of the established trade to assume the challenge of free trade.

Let us discuss these three points in detail.

1. Deficiency of hard currency exchange.

The United States is the only country in the world which has no restrictions as to the amount of currency which one can take with him upon leaving our shores. All the rest of the world, and particularly Europe, have stringent regulations governing the movement of capital between countries.

An example of the difficulties which may be encountered occurred on my recent visit to Europe. I invited one of our representatives from Holland to join me in Paris for the weekend so that we might discuss our problems. Although he was enjoying a good business and was fairly well-to-do, he expressed his regrets, and told me it would be impossible unless I would supply him with foreign exchange to pay his expenses while in France.

To cite another example, on arrival in

• There is a big demand for fats and oils all over the world but the amount that will enter foreign trade will depend entirely on government policies.

Denmark the customs official asked how long I expected to remain there. Not knowing the exact length of my stay, my answer naturally was, "I don't know." To that the official remarked, "You had better know, because you will get no butter without coupons." The answer is, of course, that even though Denmark has an exportable surplus of butter, rations at home are strictly controlled in order to add to exports. It is simply a case of building up foreign exchange which Denmark needs for payment of needed imports.

These restrictions make travel inconvenient and even impossible. They are a great hindrance to the interchange of goods. In fact, we cannot over-emphasize the importance of convertibility of exchange in facilitating international trade. It is a "must" if we want to enjoy peace. To me, peace and free trade are indivisible.

It is, indeed, very discouraging that Western Europe is unable to come to an agreement on convertibility of the various currencies, based on free market quotations as determined by supply and demand. Until the problem is solved Europe will simply be obliged to produce its needs, though at an uneconomic price.

Trade Restrictions

All one hears on every hand in Europe is "trade agreements." The big share of trade at present throughout the world is on the basis of bilateral trade agreements. In plain English they are nothing more than barter, and have caused a retrogression in foreign trade until we are now a half century behind the times.

Prior to the war a buyer or seller merely contacted a broker. He told him what he wanted, where he wanted it, how much he wanted, what position he wanted, and what kind of payment, dollars or any other currency.

It was simply a matter of working out amounts, price and terms and arranging foreign exchange by calling a bank.

Under present conditions the procedure is entirely different. The seller must secure a government permit—this is most important. It takes a long time to convince some government officials that the transaction is a proper one. Unfortunately, in some countries, "5 percentism" is an accepted procedure. After the permit is granted, he must line up the exchange, which today is dollars.

Foreign exchange brokers have always been men of keen and searching intellect. They studied exchange balances in all markets. It was their business to find out the needs for exchange by different banks. Their services were performed at a very nominal fee. Today the seller must make his own exchange transactions, involving a minimum of about five different banks, before the final trade can be consummated.

The following is an actual transaction in the sale of United States soybean oil to Germany. Holland had a surplus of dollars. Switzerland needed the dollars for an offset account against a trade

AMERICAN SOYBEAN ASSOC. ANNUAL MEETING PLACES

- 1920—Camden, Ind.
- 1921—Urbana, Tolono, Ill.
- 1922—Columbia, Mo.
- 1923—Madison, Wis.
- 1924—Ames, Iowa
- 1925—Washington, D.C.
- 1926—Stoneville, Clarksdale, Greenville, Miss.
- 1927—Belhaven, Washington, Elizabeth City, N.C.
- 1928—Camden, Lafayette, Ind.
- 1929—Guelph, Canada
- 1930—Urbana, Ill.
- 1931—Columbia, Mo.
- 1932—Washington, D.C.
- 1933—Baton Rouge, Houma, La.
- 1934—Little Rock, Stuttgart, Marianna, Ark.
- 1935—Evansville, Lafayette, Ind.
- 1936—Ames, Cedar Rapids, Hudson, Iowa
- 1937—Urbana, Ill.
- 1938—Columbus, Wooster, Ohio
- 1939—Madison, Wis.
- 1940—Dearborn, Mich.
- 1941—Ames, Des Moines, Iowa
- 1942—Lafayette, Ind.
- 1943—Cedar Rapids, Iowa
- 1944—Urbana, Ill.
- 1945—No meeting.
- 1946—St. Louis, Mo.
- 1947—Columbus, Ohio
- 1948—Memphis, Tenn.
- 1949—Minneapolis, Minn.

agreement. Switzerland bought coconut oil from a soft currency for dollars of the offset account. Switzerland sold soya to Holland for guilders. Switzerland bought Dutch coconut oil and paid guilders. Switzerland bought Swiss francs for the offset account and got dollars in return.

Is that not expecting too much of a seller?

It is an inefficient and time-consuming process. The margins must naturally be high, thus widening the spread between producer and consumer. This in turn causes dislocation in production and increases unemployment.

Free interchange of goods among the nations of the world encourages production in those areas which can produce most efficiently, stimulates consumption, and increases the volume of trading. Full production and full employment all over the world are essential to the well being of all of us, and thus to peace. Empty stomachs may be a more explosive spark for struggles between nations than differences in ideologies as such.

2. *Insistence on the part of governments to continue trading.* Our government officials should be given the benefit of every doubt. They should be given credit for trying to do that which they think is best for their country and the people. They are not naturally equipped to deal in commodities on the most practical and economic basis. Not only are their decisions apt to be based on political considerations, but they tend to follow rather than lead a trend. Their operations are guided by what has already happened, whereas successful business enterprise relies on good forecasting. Actions based on sound forecasts often result in reducing the undesirable effect of the trend or may even reverse it. Instead of removing the cause of adverse influences, government trading often introduces practices which make things worse. Such trading is very apt to result in unnatural changes in production. The present excessive production of rapeseed in Europe is one fact in point.

A second example is the economic difficulties in which Argentina is involved at the present time. Only 2 years ago when I was in Argentina, foreign missions there were eager to pay hard currency for oils and other food stuffs at high prices. Greed and business inexperience led the officials to raise prices, disregarding performance of the terms of existing contracts. This created great animosity on the part of their natural customers. As a result, Argentine fats and oils went into surplus stocks rather than export channels, and today the Argentine has large unsold surpluses of oils and oilcakes.

A third example, but on a lesser scale, developed in the United States last year. Following the then popular political cry against inflation, the Secretary of Commerce restricted the issuance of export allocations and licenses on fats and oils. He had not foreseen the developing picture. By the time he withdrew his restrictions the damage had been done. Instead of being exported, a sizeable quantity of United States fats and oils had gone into surplus stocks.

The resulting concern over excessive stocks at home caused a severe drop in our prices of fats and oils. Europe needed and wanted our oils at that time. There are many other examples of a similar nature, in fact, too many to discuss all of them here.

Government restrictions and state trading, irrespective of how well meaning, have no place in the economy in time of peace. The sooner they are removed, the quicker the world economic body will recover.

3. *Reluctance on the part of the established trade to assume the challenge of free trade.* The greatest disappointment to me on my recent trip to Europe was to note the loss of faith by old established business houses everywhere in their ability to meet free competition. It is quite well established that under bulk buying and "grandfather rights" established business is now well paid; in fact, far better than they would be under free

competition. The marginal producer is guaranteed a fair return, which gives the efficient producer an extremely handsome margin. It was disillusioning to see delegates to the Seed Crushers Congress table a resolution asking their governments to withdraw from bulk buying.

This fear of free competition was prevalent not only among the crushers alone. The well established grain houses unfortunately felt the same way. It seems unbelievable that top ranking business organizations should be afraid to meet competition again. It makes no difference how much we resist natural laws. Nature will triumph in the end. The detour is only temporary.

"Give a Little"

My own academic training and experience naturally have made me a free trader. We must have faith in our statesmen. The technical men see the situation clearly; the powers, however, are waiting for public opinion to crystalize. Business must take the long view and be willing to sacrifice temporary financial advantages. They will disappear anyway. Why not take the initiative before it is too late? History tells us we must be willing to give a little every now and then. If we do not we will lose all our advantages later on, one way or another.

We must foster policies which will lead to a better distribution of productive resources the world over. Today in Europe agriculture is very inefficient. Many of you have seen Swiss and German farming of small strips of land. How can such practices produce desired results? World production can be made effective by letting each area produce those commodities which it can produce most efficiently. Only through full production and free distribution can the world avoid unemployment. We must not forget that unemployment brought Hitler.

Our methods of handling and storing, and our technique in processing of soybeans have no equal in any other place in the world. Within the span of less than 20 years, we have increased the efficiency of our crushing operations far in excess of our European competitors. The increase in the use of the solvent extraction process has played an important part in the growth of that efficiency.

Should our soybeans be forced out of foreign markets, soybean producers and the industry generally can still continue to prosper. Only a small percentage of the soybean is oil, while the biggest part is meal. The increase in population together with our improved standards of living will afford a ready market for meat and dairy and poultry products. This in turn means a fair price for the meal to feed livestock and poultry. The price of soybean meal, which is the largest part of the bean, shows quite clearly that soybeans can stand on their own merits, and can get along, if necessary, without foreign demand.

WORLD FOOD ROUND-UP

and American Agriculture

By STANLEY ANDREWS

TAKING THE LAST world report of the Office of Foreign Agricultural Relations as a basis, it appears that total world production of food for the current season will be at or slightly above prewar levels. This does not mean of course total per capita production. World population has increased sharply from prewar and the total world supply of food on a per capita basis is still substantially below prewar consumption.

To put the matter statistically, total world production of wheat is likely to be between 5 and 7 percent higher than prewar; potatoes probably 25 percent; rice, 12 percent; meat of all kinds nearly 100 percent, milk 103 percent, butter 85 percent, and eggs, at about 119 percent prewar.

It is only when one looks at the different areas of production with relation to the people does one really begin to see the implications in the present world food picture. In the Far East with the great China market more or less cut off, rice production will perhaps exceed effective demand by possibly a million tons in Burma, Indo-China and Siam. In Europe total food production will be possibly 5 to 10 percent less than prewar. With an increase of population by more than 10 percent, this means substantially less per capita production than prewar.

The great surpluses which are building up are in the Western hemisphere—largely in North America and primarily in the United States—where, with bumper feed, corn, wheat, and oil crops, we are in the midst of the second greatest harvest on record.

When we narrow this all down to individual crops on a world-wide basis, we find rice is surplus in the Far East; we find potatoes greatly increased, and possibly surplus of sorts for human food in Europe. There are surpluses of about everything else in the United States including rice, wheat, corn, pork, and oils, lard and oilseeds.

On the matter of fats and oils with which this body is somewhat concerned we have, for instance, possibly a surplus over and above our needs of around 500,000 tons in the United States. But here again we run into a disparity on distribution. To bring Europe back to its prewar uses, not what it needs or

wants or could use, but merely to prewar tonnage, requires 2½ million tons more fats and oils than Europe produces. Some of the colonial areas, of course, produce a substantial surplus which will be shipped to Europe but if Europe had some way to get it, the 500,000 tons surplus in this country would easily move to the 19 Marshall Plan countries alone. In two of these countries, England and Western Germany, the fat ration is still about one-half of prewar.

Now at some risk of boring you with a lot of figures, let us narrow the discussion down to the Marshall Plan countries and talk in terms of calories. While calorie figures represent the food energy produced and consumed in a given area, our friends in Europe have at times accused us of "giving them the calories and keeping the food."

If we take production in terms of calories we get a fair picture of what has been taking place in the Marshall Plan countries in the past 2 years. In the 1947-48 season for instance the Marshall Plan countries produced 1,575 calories per person. They imported 950 per person—the highest importation per capita being Great Britain with 1,875—Western Germany and Switzerland ranking next with 1,500 and 1,450 respectively. In the 1948-49 season production was 1,825 calories per person per day and importations were 875 making a total average of 2,700 calories per person per day. This is lower than experts say is needed for maximum physical output for a nation but it is above the starvation line.

Need Our Surplus

Taking the production figures for 1949-50 and converting them into calories it is expected that the current year will run just about like the 1948-49 season with some improvements in the quality and variety of the diet by increased milk, meat and poultry, increased production and particularly distribution of fruits and vegetables and fish.

Getting back to the statistics of the situation, Western Europe, as represented by the Marshall Plan countries, will produce 68 percent of the 2,700 calories per person per day it will consume.

Now, as the greatest food producing area on earth from the standpoint of production per capita we can look at these

figures and estimate that the "outlook is good for the continuation of the need for our surplus production" in these countries alone, not to mention other great deficit areas such as India, Japan and even some of the Pacific Islands.

But merely stating and recognizing the need is not enough. How can we, or rather the American farmer, produce and distribute this extra food and get paid for it? If the world could get back to the prewar usages of food and fibre on the basis of the increased population of the world there would not be such a grave situation ahead of us on mounting surpluses. But unless and until the combined efforts and intelligence of the world can come to some rationalization, or solution or mechanism whereby the surpluses of one area are available to another area on the basis of exchanges of goods or services, America will have to choose between rationalizing her production on the basis of effective demand or supplying credits and grants of money which will likely never be repaid to buy these surpluses.

To put it more bluntly we've got to find a way to exchange our farm surpluses with other nations for things they have to sell or we've got to quit producing them. We doubt whether American agriculture can maintain its present plant and production capacity and remain economically sound without at least 5 to 10 percent of our volume of output being exported. Just as the small margin of export in many industries means the difference between a healthy, prosperous and efficient business so does this small percent represent the extra margin which keeps farming at a reasonably prosperous level.

One is likely to raise an argument like the old one of which comes first—the hen or the egg—but it is a historic fact that the most prosperous periods of American agriculture have been in those periods when her exports were highest. If we turn back to the so-called base period in American agriculture on which parity is figured, the years 1910 to 1914 when there seemed to be the best balance between industry and farming we find the United States exporting in some years 27 percent of its output: in terms of products, 9 million bales of cotton; 390 million pounds tobacco; 350 million bushels wheat; 325 million pounds dried fruit; and substantial amounts of corn, fruits and large amounts of timber products.

Changed Picture

Of course, then we were a debtor nation and these items helped to earn the exchange to pay interest on our debts to Europe. That picture changed with World War I and the movement from a debtor to a creditor was accelerated between the wars, ending with World War II when the United States was creditor to practically every nation of the world.

American production literally saved the Western world from defeat, and if one wishes to narrow that down to farming, one can state without the slightest fear of contradiction that the American farmer

in World War II produced the greatest volume of food and fibre ever produced by a similar group of individuals in the history of the world. Some 15 percent of the population of America, working on their farms produced the food without which the armies in the field and the peoples they liberated would have perished. This same production, which backed up the greatest massing of military might the world has ever seen, poured into the wrecked and starved countries of Europe after the fighting stopped—yes, it even poured into the lands of our former foes. While we little appreciate it now—that food which American farmers provided with their toil and all Americans paid for literally saved most of Western civilization from mass starvation in the terrible winters of 1946 and 1947.

But enough of the past. What has all of this to do with the group of people whose main interest is in the American soybean? What about the future of this great new crop for America? Will it become just another crop to add to the already mounting surpluses of food in this country or will it continue to be a great cash crop for farmers and a feed and food crop of supreme importance to all people?

In the past year America has exported about 37½ million bushels soybeans in terms of whole soybeans, oil and cake. That's a mere trickle in comparison with the prewar movement of soybeans in world trade when the great volume of soys from Manchuria moved over the world. But that is an important item for America. It again may mean that little 4 or 5 or 6 percent that is the difference between profit and loss to the American producer. United States, China and Manchuria produce about 93 percent of the total world supply. In the prewar times

our production represented about 12 percent of that supply. Last year it represented 37 percent. But international trade with soybeans, even with the increases from the United States, is still far below prewar, running now at about 25 percent of the 1935-39 movement.

Of course the more than 440,000 tons of beans, oil equivalent which used to move from China and Manchuria to Europe has been reduced to a mere trickle. This is at once an opportunity as well as a responsibility for America. Europe wants and needs our soybeans. They have a large processing capacity built up formerly on the Manchurian supply. They need the oil for food and they need the oil cake for fodder for the livestock. The big question is the same one which confronts us on every turn—how can we sell to an area which has no dollars? Presently the exports of soybeans from the United States are being held up largely by the ECA funds going to Europe. When ECA ends—as sooner or later it must—Europe will buy our farm products, our soybeans, to just the extent that we buy things from Europe—no more and no less.

Prospects Not Good

Let's look at the most recent figures on international trade. Over the past 2 years we have exported about 20 billion dollars worth more goods than we have imported. That difference between what we shipped out and what we shipped in is called our "trade gap." Now let's see what made up that "trade gap." The first year, or in 1947, it was about 9 billion dollars: 30 percent was bought by the dollar earnings and credits which other countries possessed. The other 70 percent of the gap was made up of ECA or other types of gifts or money assistance from the U. S. In 1948 the gap had narrowed a little—to about 7 billion dollars but the countries were able to pay for only about 15 percent of that 7 billion dollars with their own money. The rest had to come from various forms of relief, ECA, military spending and the like. This year with the gap running around 5 billions, the amount that the countries are financing themselves is running at about 10 percent of the total. It does not take much figuring to predict what will become of our exports when the gifts cease. It is well to remember, too, that at least 50 percent of these exports were food, fibre and tobacco products—every one of which is surplus in U. S.

The long-term prospects for our exports are not assuring and while mighty efforts are being made to lick this trade problem the trends in international action, as against published aims and hopes, are less assuring. Here in America we have developed mass production of nearly every conceivable item which man can want to such an extent that there is not the drive or the incentive to find ways of developing trade and exchange of goods. In Europe as well as much of the rest of the world, countries finding themselves short of nearly everything and wrecked and torn asunder by war have clamped every rig

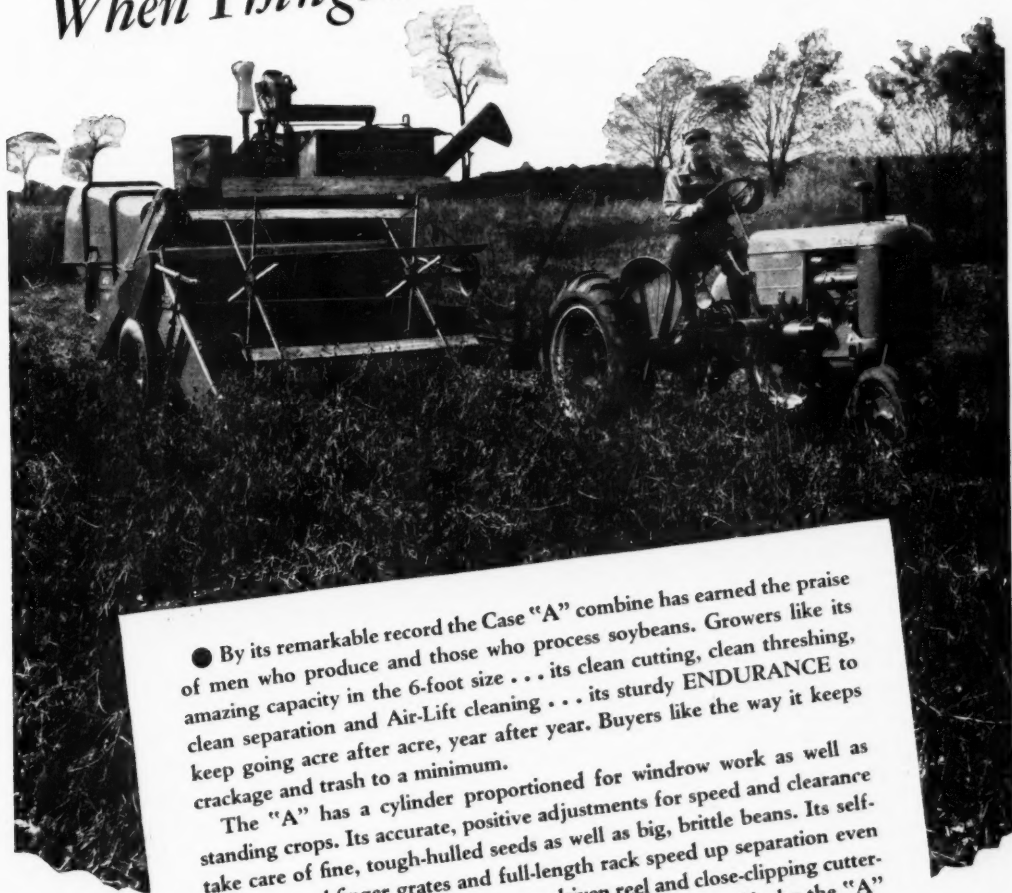
(Continued on page 89)

Andrews speaks to convention banqueteers. Minnesota's Gov. Luther Youngdahl is at left.



Tops for Soys . . .

When Things Are Good or Bad



● By its remarkable record the Case "A" combine has earned the praise of men who produce and those who process soybeans. Growers like its amazing capacity in the 6-foot size . . . its clean cutting, clean threshing, clean separation and Air-Lift cleaning . . . its sturdy ENDURANCE to keep going acre after acre, year after year. Buyers like the way it keeps crackage and trash to a minimum.

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CASE



HARVEST MACHINERY FOR 106 YEARS



R. G. BRIERLEY

SOYBEANS are worth more money! Your able officers have made that statement a by-word to an ever-growing soybean industry, and there isn't a thinking member here who doesn't heartily subscribe to that well chosen slogan.

But there are many ways of reaching the objective of making soybeans worth more money—some ways which are temporary expedients that redound to the passing advantage of only a segment of the industry—other ways which, though slower in realization, result in building permanent values for both producer and processor, and make soybeans *fundamentally* worth more.

One temporary way of making soybeans worth more money is by restricting the supply portion of the supply and demand equation. Restriction of supply can be effected by growing a smaller crop, by holding back soybeans on the farm, or by too heavy exports. The result! A temporary price rise. But what is the ultimate result? The ultimate result is that the processor is forced to increase the price of his existing oil and meal products to the point that he prices himself out of competitive markets—substitution by his customers is encouraged—and the industry starts moving backward.

As against this, the sound permanent way to make soybeans worth more money is to so increase the value of their end products in human nutrition, in animal nutrition, and in industrial utilization, that the processor can afford to pay better prices for his raw material. In a sound economy the products made from the soybean have to be worth more before soybeans can command better prices. To be worth more, the products of the soybean must first give more value to civilization, and secondly be so recognized that they get into every day usage.

I've been asked to talk today about my recent trip to Germany and the status of the German soy flour program. I want to tell you first that the trip was the out-

SOYBEANS ABROAD

Soy Flour in EUROPEAN OCCUPIED AREAS

By R. G. BRIERLEY

Assistant Vice President, Archer-Daniels-Midland Co., Minneapolis, Minn.

come of our conviction that soybean products can be worth more. It was the culmination of work done over the last 7 years by a small group of determined processors to establish edible soy flour as a premium product that could increase the gross revenue of the processor and build new values for the soybean.

Dr. Bening, my able collaborator while I was in Germany, and the man who has done more for the soybean industry in Germany than any other man, fortunately is here to give you some first-hand information on the soy flour program we started in Germany. But I want to introduce the subject by sketching some of the background that led up to this German soy flour program, and in so doing, to give you some idea of what the *processor* goes through in creating new and more lucrative markets for soybean products, so that he can afford to increase his bids to you on soybeans.

Prewar Infant

Soy flour was a rather new and struggling infant when the war started. But it was sound economically and nutritionally, and had more to offer a protein starved world than any other single food product. As compared with the familiar protein foods, milk, eggs, and meat, it was ridiculously cheap. On a unit protein basis it was only 25 percent the cost of the next lowest competitive protein food, milk powder, and so far as calories per pound were concerned soy flour was the same as carcass beef and 25 percent less than other foods which were essentially carbohydrate foods. From a nutritional standpoint soy flour, if properly processed, was the equal of milk in protein quality. We had proved that it was the greatest supplement food there was when incorporated into other basic foods. By adding it to bread, meat products and many allied foods, we were not only adding superlative protein, but the protein was increasing the efficiency of the other proteins in those familiar foods. Our Dr. Hayward and other investigators spent many weary and expensive hours proving that edible soy protein was nutritionally one of the finds of the century.

But in competitive business, having a

superlative product is not enough. It has to be sold. It has to take its place and win its recognition alongside other established products. We can tell you from personal experience that it takes time, money, courage, and faith to establish a new product. Normal prejudice toward a new product is hard enough to overcome; but even harder is the fight against calculated prejudice—calculated prejudice originating from competitive products that see in your new product a threat to their future—calculated prejudice coming from a few complacent members of your own industry who feel you should withdraw from the market until your product is absolutely perfect—calculated prejudice from those few government officials who resist progress and change.

Despite its merits, soy flour started out as a sort of bootleg item in meat products. It took years of concentrated effort and exhaustive evidence (with a new product you are wrong until proved right) before the Bureau of Animal Industry finally recognized soy flour as a permitted binder for sausage. It took expensive technical talents to prove the case for soy flour as an optional ingredient in bread during the food and drug hearings in Washington. It has taken much promotional and demonstration work to introduce soy flour and then resell it every time a demonstrator of other competitive foods takes it out of a customer's formula. It has taken persistence and exhaustive evidence to disprove the many bizarre rumors that have been started by unscrupulous competition.

Difficulties

The difficulties involved in introducing a new product and creating new value for soybeans is typified by the difficulties which sent me to Germany. The Army had sent about 200,000 tons of soy flour to Germany. The industry had turned everything upside down to produce the soy flour on practically no notice. Then just as suddenly the program was stopped. Ill-advised political pressure had fostered a costly and ridiculous potato flour program on the Army. At the same time rumors started to come back from Germany, indicating the soy flour program was a failure because of inherent weaknesses in the

product. We were told that the soy flour we had shipped contained residual solvent and was "dangerous" to health, that the soy flour was not adequately debittered and gave an off flavor to the bread in which it was used, that soy flour was in the grain allocation and would have to be taken out before it could be distributed, that soy flour was being distributed by oil millers who knew nothing of the product, that soy flour was so bad it was making bread unsalable, that soy flour was backing up so much in distribution that we'd have a surplus of soy flour in Europe for years to come, and that soy flour couldn't compete with potato flour as a bread ingredient.

In view of that imposing list of objections, my firm decided to take the plunge and send me to Europe to get a factual report for the future if nothing else. It was an expensive gamble but one of the many we've taken in trying to realize new values for the soybean.

Upon arriving in Germany, I was literally adopted by a highly competent but terribly understaffed food group to get the real story on soy flour usage in Germany and then find ways and means of moving the soy flour stocks, and then sell the German food administration on the absolute necessity of proper soy flour utilization if the protein crisis in Germany was to be met.

6-Weeks' Tour

I traveled for 6 weeks in Germany with Army car and driver and with Dr. Bening as interpreter, advisor, and friend. During that time I saw virtually all the key food men in the Allied zone. I talked to most of the responsible allied food men, to the leaders of the German food administration, to the principals of the Ruhr coal control group, to the doctors of the Max Planck Institute (the most prominent human nutrition laboratory in Germany), to the key baby doctors in Bremen and Hamburg, to the principals of the Kralog relief group, to mayors, senators and administration men in most of the principal cities of Germany, to bakers, meat packers, consumer representatives, union leaders, and to a group of over 50 soybean processors and importers. I inspected stocks of soy flour. Dr. Bening and I worked day and night on the most intensive job I've ever been on.

I feel that the findings of that trip are significant for the future of making soybeans worth more by incorporating them directly in food products. These facts have already been turned over to the Army.

I found first that the quality of the soy flour was excellent except for two small lots made by two new processors whose minor production had meant virtually nothing in the large over-all program. There was no bad odor or rancidity as per samples carefully drawn and subsequently re-examined. I found the man that started the benzene odor story. He had mentioned, incidentally, in a report that a color he observed in samples examined under a fluoroscope might show residual solvent, but had subsequently

found the same color in samples of whole soybeans. Because of this he had dropped his investigation and was so little concerned that he was taking his laboratory samples home and feeding them to his child with excellent results.

Bread Troubles

I found next that the trouble with any soy flour in bread was that it was the last of a series of grain flour substitutes, and therefore bore the brunt of the criticism of bread in general. Bread was being made with potato flour, corn flour, rye flour, and wheat flour almost incidentally. The incorporation of high percentages of soy flour on top was the straw that broke the camel's back. To add to the difficulties scheduling of soy flour shipments and stock was so upset by shipping difficulties that the soy flour came in all at once on German distributors who knew nothing more about soy flour than that the name made it sound like a type of wheat flour. Maldistribution and the lack of wheat flour resulted in some bread that was almost 100 percent corn flour, and other breads predominately soy flour. The resulting bread was an abomination. Corn flour and soy flour took the brunt of the public criticism because they were the new and unknown products.

I found next a soybean industry hopelessly divided and pulling against each other. If there was ever proof for the necessity of a united soybean industry, I found it here. The full fat manufacturers, the oil millers, the growers, the soy importers were all pulling in different directions. There was no united front to present to the government and competitive food interests were having a merry time punching away at the soy program. I gave one of the most difficult speeches of my life, with interpretation, sentence by sentence, to a group of 50 soybean principals in Hamburg, urging them to recognize the needs of Germany for new protein foods and to present a united program to their government food men calling for more soybeans and soy products. I am happy to say that they did present such a program and that it was the start of the present utilization of soy flour in sausage.

I found next a universal recognition of the terrible lack of protein which could not be touched in any foreseeable future by meat production increases. The prewar production of meat in Germany was 45 kilos per person. The consumption at the turn of the year was 9 kilos. Even

the most optimistic estimates for the next 5 to 8 years were for about 50 percent of prewar meat consumption. The problem, however, was to get public recognition of this situation and to stop the wish-thinking philosophy that something would suddenly pop up to solve the meat problem other than the actual development of new protein foods.

The first few weeks of the trip convinced me that politics in Washington was going to force large quantities of corn flour and potato flour into German bread. This left no place for soy flour in bread. It was necessary therefore to look around for another outlet for soy flour and the logical place was the meat program. Meat was so short that the ration was a farce—so short that the black market was in full operation, and little could be done about it. Soy flour had been used successfully in meat in this country so it seemed a logical starting point. The first problem was to take the products that were available and try to compound them into new protein foods that could be put up in casing form so that they would resemble meat. The technical problems were imposing and destruction had been so devastating that research facilities were almost non-existent. It was decided to start the work in the United States and then complete it in Germany.

Our research laboratory as well as others in the industry were put to work on the problem and samples were sent to Germany. The soy flour association brought Dr. Bening to the United States and I traveled with him for 4 weeks to show him American facilities and to show him the progress of work here. He then went back to Germany where work continued under the sponsorship of the German and Allied food men. The end result was a new product containing 50 percent meat and 50 percent soy flour and vegetables and other ingredients, which when made up and put in casing was so good that it fooled the experts. After substantial trials and tribulations, this product was produced and introduced into consumption.

Bright Future

The introductory job has been an imposing one. The meat people had to be sold. The chemists and food police had to be placated and cajoled into some sort of cooperation. The consumer took the product without question and with considerable enthusiasm, because it was not only good, but about half the price of meat. The sales promotion job is only just started, but the future looks bright, and before another 6 months have passed we will have proved that this new product can solve what seemed like an insuperable problem when we first tackled it. Dr. Bening will undoubtedly tell you more of this.

This trip and the new soy flour meat program now going in Germany points up again the significant conclusion that if we were to center our attention on the

(Continued on page 88)

• The author spent some time in Europe taking the "bugs" out of the soy flour program. He is vice-president of the Soy Flour Association.

Soybeans in the FOOD ECONOMY OF GERMANY

By WILLIAM BENING

Frankfort, Germany

DURING THE last 15 months Germany has received not less than 170,000 tons of soy flour and grits plus almost 150,000 tons of soybeans and soy products. This is a tremendous total after almost 10 years with few imports. By comparison, Germany's soybean imports reached the record of 1.4 million tons or 60 million bushels in the late twenties.

The beans were at that time supplied by Manchuria. Manchuria, however, became a poor buyer of German merchandise. That made it more and more difficult for Germany to continue buying soybeans from that source. Imports dropped from year to year.

At that time strong efforts were made by Germany to promote soybean growing in southeastern Europe. She bought increasing crops from Rumania, Bulgaria and Yugoslavia, while Hungary supplied the seed. Payment was made with German industrial products needed by the southeastern countries.

During the summer of 1945 the German food economy was entirely disorganized. No meat, no milk, no soybeans. The most severe shortage was in protein. After the arrival of the American Occupation Forces in Berlin I submitted to Colonel Andrews a plan for possible use of American soybeans to supply high value protein to German consumers. He was interested.

In 1946, the first allotment of 70 tons of soybeans was received to make full fat soy products. They were used with splendid success in Hessian hospitals to assist in rebuilding body protein in cases of extreme malnutrition.

Success of the first allocation induced the Military Government to allocate another 7,000 tons of the American soybeans in 1947. This shipment too was used exclusively to make full fat flakes, flour, grits, etc., to improve the protein value and the fat content of warm meals in hospitals, workers' canteens and more particularly in schools. A series of special products was made for diabetics. A spray-dried full fat soy milk was very helpful to babies suffering from cows-milk allergy.

All products had the advantage of being cheap, very palatable and perfectly adapted to the cooking and eating habits of the people. The filling effect of the meals was sensibly increased by the addition of only 5 to 15 grams of full fat soy products per person to dishes that were prepared without any meat and mostly without fat.

Unfortunately, this most promising work

of the German full fat soya industry had to be discontinued because it became necessary for the U. S. Military Government to extract the oil from all soybeans that arrived, and to use it as "visible fat" in rations. The factories making full fat soy products were closed. They lost the market that they had just conquered for the German full fat soy products from American soybeans.

Yet, the protein supply for the German diet remained the central problem of the food and agriculture group in the Bipartite Control Office. One hundred and seventy thousand tons of American soy flour were shipped to Germany, mostly in 1948.

At that time the grain and flour supply for German bread production was very scarce. Not only soy flour but also corn flour, potato flour and smaller quantities of defatted peanut flour had to be used to maintain the bread ration. None of the materials was known to the majority of bakers. We had no time to prepare elaborate fool-proof working instructions for them.

In Germany, 60 to 80 percent of bread production is handled by about 40,000 small bakers. It is obvious that very clever educational programs are necessary if a new material, even of finest quality, is considered for increasing production and fortifying nutritive values of bread.

But education could not be accomplished in the short time we had. The whole program was a failure. There is no doubt that soy flour, if indicated quantities are supplied and an acceptable percentage of admixture is prescribed, improves the taste and quality of bread.

But conditions were unfavorable. It happened that the storm of protests from all quarters finally concentrated not on peanut or potato but only on soya. That was technically absurd but psychologically somehow understandable. During the war soy foods of poor quality had been offered for human consumption and had made the people suspicious of soya in general.

This result had the regrettable effect of discouraging "Arbeitsgemeinschaften Soja" in Hamburg and Frankfort. The groups had been founded in 1946 by leading trade and manufacturing firms to sponsor officially and financially in Western Germany the plans and activities of my

first soya discussion with Colonel Andrews in Berlin in 1945.

"Arbeitsgemeinschaften Soja" were centers of enthusiasm and sacrifice for the idea of making soya a new basic food for the German people. On top of that, the groups had formed scientific advisory committees in which German soybean scientists and technicians were working together to form and permanently enlarge and strengthen the base of our activities.

The committees worked in close cooperation with institutes, universities, outstanding physicians, and food scientists. They accomplished wonders in research and uncovering new knowledge.

The outlook was more than dark at the time of the bread program in the second quarter of 1948. But two fundamental facts were left unchanged:

1—The lack of high value protein in the German food economy.

2—The high biological value of soya protein.

The first thing to do was to establish the reasons for the failure. Some of the first road marks on the new path were set up by the wholehearted cooperation we enjoyed in the second half of 1948 from Ersel Walley, president of the American Soybean Association, and R. G. Briely, vice president of Archer-Daniels-Midland Co., and secretary of the Soy Flour Association. Not for a second did the gentlemen hesitate to study the situation on the spot or to collect first-hand information through nerve-straining trips in a country where at that time travel was nothing but an extremely unpleasant hardship.

The many investigations made since last year have fully confirmed the fact that Germany, unless she gets back some of her Eastern territories, will be short of meat and milk for a long, long time. It will be exceedingly difficult for her to develop her exports to meat producing areas in a volume that will anywhere near meet the requirements of the West German population for meat. It has also been confirmed that soy protein is one of the most valuable sources to help in the deficient German protein balance.

The failure of the soya bread program was not a failure of soya nor the fault of any persons or groups involved, but essentially due to over-riding economic con-

WILLIAM BENING



SOYBEAN DIGEST

• **Germany offers a big market for U. S. soybeans for many years if means of trade can be found. Author is a German soya specialist.**

ditions resulting from the postwar emergency.

* * *

Meanwhile, two new lines of soya utilization for protein are making progress:

1—The soya sausage program, and
2—A new start toward producing a series of full fat soy products for manifold uses in our food economy.

The sausage program is being worked on a national basis all over Western Germany, assuming that the French zone will soon enter into the program. It is based on an entirely new product, made from solvent extracted soy flour and grits made to comply with particular specifications.

The product is in the flour form. It is supplied in bags. Fool proof instructions make it easy for every small butcher to prepare first class sausages of almost any type at considerably reduced prices.

So far we have encountered difficulty after difficulty and sometimes have felt ready to give the matter up. But two new encouraging factors were stronger than the disappointments:

1—The stubborn enthusiasm of all unprejudiced butchers, and

2—The excellent taste and low price of 50/50 soya sausages. It is a fact that all consumers who have had an opportunity to eat the sausage are just as enthusiastic about it as the butchers are.

The difficulties this time came from the food police, viz. veterinarians and chemists. Germany, like other nations, has a pure food law. It requires that sausages must not contain anything but meat. The law was enacted under entirely different food conditions than those now prevailing.

A good many people, being deeply impressed by the amazing improvement of our food situation, are now hopeful that the good old times with plenty of meat and sausage have already begun to come back. The facts, however, are different.

Many of us stubbornly stick to the idea that in spite of all, soya will win the case. From the end of April until now about 1,000 tons of Neger soya flour have been sold to butchers for sausage production. That means more than 13 million pounds of palatable and cheap soya sausage have been consumed by our people.

* * *

Another big step forward is that soybeans are again being allocated to full fat soya factories. In Germany it is this group of manufacturers who consider the bean an eminent protein food for man. The special feature of their process is that they do not extract the fat. They do not

deny that there may be utilizations for which defatted soy products are to be preferred. They admit for example that for sausage production defatted soy flour plus lard is preferred to oil-containing full fat soy flour without lard. For many other purposes, however, they are convinced that, at least in Germany, full fat products are much preferred as protein food.

These firms continued to develop new series of products even in hard times when they were entirely put out of business by the lack of raw beans. The new products promise to assist in making soy food popular in Germany.

You must bear in mind that the German food situation has been amazingly improved. It is much more difficult now than ever before to introduce new foods. It is good luck that our full fat manufacturers have prepared improved foods that we have every hope will meet with the more stringent requirements of today. The most important fact, however, is that Gwynn Garnett, chief of the food and agriculture group in the Bipartite Control Office and the efficient sponsor of our protein programs, has accepted the German Food Administration's proposal to provide the factories again with soybeans for their own style of processing.

* * *

Soybeans are one of the comparatively small items in the abundant flow of American farm crops that saved the European nations from starvation and gave them the basis to reconstruct their own economies.

The work has two instruments, the Army Purchase Program and the Marshall Plan. The Marshall Plan will expire in 1952, the Army Purchase Program possibly in 1950. What will not end however is huge food and feed deficiencies in the West European nations and surplus crops in American farming.

American farmers and European consumers have a very strong and joint interest to prepare before expiration of the Marshall Plan a new system to continue the flow of American surplus food production to European food-deficient nations. This time however the system must be based on the sound old "buy and pay" basis, and here is the difficulty.

Europe cannot pay dollars unless she earns them, yet she cannot earn them except by industrial exports to the States. The States however own and operate huge industries and cannot allow imports of foreign industrial products that they make themselves.

The question is whether Europe can offer special products of her own make that may find a market in the States, but are not produced in the States. The question is a vital one. One hint may be given here. The idea was suggested to me by Dr. Hammer of the food and agriculture group, RICO. He explained that there is one difference in the structure of the American and European national economies. Both continents have highly developed mass production for mass consumption of all types of merchandise. But in addition to that you find in Europe the

remnants of the old handcraft production of more or less luxurious articles. This neither exists in the States nor fits into your economic system and thinking.

Dr. Hammer continued: If any nation can do so, the U. S. can afford to enjoy luxury articles from European handcraft production in addition to the normal daily life needs as supplied by your own industries.

If Dr. Hammer's idea can be worked out to create a new system of real business on the buy and pay basis, you can keep the European markets to sell your possible surplus crops against payment in dollars, while Europe can continue to buy substantial parts of her food and feed requirements from American farmers without depending any longer on sacrifices of your taxpayers and without violating the interests of American industries.

When there are no American manufacturing interests to be protected there should be no reason to maintain protective tariffs on such merchandise, but many reasons to reduce them. It might mean that Europe could sell luxury stuff up to 5 billion dollars a year, and buy American farm crops with the whole sum. This sum looks attractive enough to make it worth while to study the system.

* * *

If no solution can be found, American farmers will have to look for other outlets to sell their surplus crops. And European nations, though belonging to the same Western Hemisphere as the U. S., will have to look for other sources of supply to cover vital additional food requirements.

Let us take soybeans as an example. It is the most valuable and cheapest means of closing the protein gaps and the fat deficiencies of the European nations. It is only natural for them to buy the beans from the States. If, however, they are not given a chance to earn dollars to spend for American soybeans, we shall be bound to organize our soybean acreages in our own countries. Even under the best of circumstances this will cost us many years of tremendously expensive pioneer work. Yet we shall never harvest enough to cover the demand and shall therefore be forced to resume soybean business with Rumania and Bulgaria. This will mean creating another huge soybean acreage in the world, though seeds and fields and experience to grow this particular crop are abundantly available in your country. The fore-named countries are outside the Western Hemisphere and you know as well as we do that economic cooperation inevitably leads to political approach.

Some time ago I saw in Readers Digest a word of Henry F. Henrichs: "Business is never good business until it makes a friend." I am happy to say that I feel our beloved soybean has already made us friends.

Allow me then to finish my report with my fervent wish, let us remain friends. Let us maintain the soya business of the States with Germany, or better, with all of Western Europe.



J. C. COWAN

OVER THE PAST 10 years the increase in the commercial utilization of soybean oil for food use has increased almost three-fold. From a minor position among edible oils in 1939, soybean oil has become the major vegetable oil for food in this country. Last year, its use totaled approximately 1.1 billion pounds, with 750 million for shortening, 200 million for margarine, and 150 million for salad oils and other food uses.

With such phenomenal growth in the use of soybean oil, it would appear almost folly to suggest that all is not right with soybean oil. Indeed, let us hasten to add that much is right about the oil from our golden soybeans. The removal of the oil by either continuous screw presses or solvent extraction is a much simpler, less expensive operation than the same type of operation with many other oilseeds. The oil yields lecithin, refines easily with alkali, and can be bleached and deodorized readily to a bland oil. The processing of beans improves the nutritional value of the meal and supplies a high protein feed.

However, soybean oil has one defect which limits its utilization for foods, and this may drop soybean oil from its position

of pre-eminence. The defect is the type of off-flavors which develop during oxidation of the oil.

Most edible fatty products develop flavors and odors which may be described as rancid. Soybean oil, on aging or when used for frying or cooking, develops rancid odors and flavors just as do other oils. But in addition it also develops more dominant flavors and odors, which are best described as painty, grassy, or fishy. This is sometimes called "reversion." These flavors are held to a minimum in hydrogenated products and are most predominant in liquid or salad soybean oil. Refiners of oil consider this "reversion" problem to be of first importance.

The American Soybean Association and the National Soybean Processors Association have placed it at the top of research problems dealing with the utilization of soybeans. Reports of refiners indicate consumers show a preference for vegetable oil products which contain 50 percent or less of soybean oil.

This flavor problem of soybean oil appears to be reflected in part by the average price differential between soybean and cottonseed oil over the past several years. This average has ranged from \$0.005 to \$0.026, as

shown in Table I. This table also shows the amount of oil used for foods and the total price differential between soybean and cottonseed oils. Doubtless, the entire differential price between soybean and other vegetable oils is not traceable to its flavor instability alone. However, if only one-half cent differential were caused by this instability, the value to the industry is approximately 5 million dollars a year.

At Peoria our research was initiated in 1944, but the U. S. Regional Soybean Laboratory had studied the problem for several years previously. A survey of their work and of industrial experience emphasized that the flavor problem was an extremely difficult one.

Only one test for the phenomenon was approved by all investigators, and we immediately set out to refine and improve the scientific basis for it; namely, the tasting of oils. Indeed, the proof of the pudding is in the eating. When you realize that many flavors are important at concentrations of 1 part in a million or less, it is not surprising that adequate tests were not and are still not available for this peculiar flavor instability of soybean oil. To make our story shorter, we assembled a taste panel of 10 to 12 members and used the paired-sample technique and triangular tests for de-

¹ One of the laboratories of the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture.

Figures 1 and 2—Scatter diagrams of flavor scores of individual members plotted against average of flavor score of panel. Taster 8 agrees with most of the panel, whereas 12 frequently disagrees.

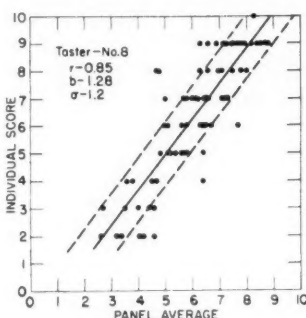
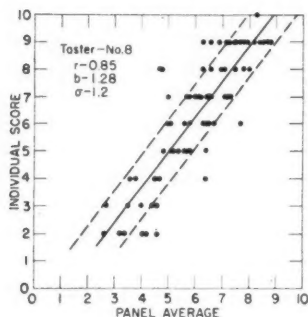
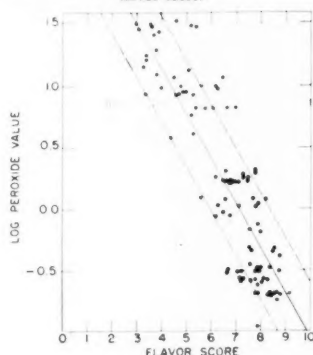


Figure 4—Relationship of peroxide value and flavor score.



Cottonseed oil ¹ crude, tank cars, S.E. Mills	TABLE I Average soybean-cottonseed price differentials				Total of price differentials
	Soybean oil ² crude, tank cars, mid- western mills	Difference in price	Utilization of edible ² soybean oil		
	Cents per pound		1,000 lbs.		1,000 dollars
1938	6.7	5.6	1.1	256,265	2,819
1939	5.6	4.8	0.8	389,718	3,118
1940	5.3	4.8	0.5	406,888	2,934
1941	9.5	8.5	1.0	431,748	4,317
1942	12.7	11.6	1.1	598,431	6,583
1943	12.8	11.8	1.0	971,688	9,717
1944	12.8	11.8	1.0	1,106,218	11,062
1945	12.8	11.8	1.0	1,132,361	11,324
1946	15.8	14.6	1.2	1,236,952	14,843
1947	25.9	23.3	2.6	1,178,314	30,636

¹ U. S. Dept. of Commerce — Industry Report — Fats and Oils, Annual Review 1948, p. 47.
² U. S. Dept. of Commerce — Industry Report — Fats and Oils, Jan., 1949, p. 20.

TABLE II
Constancy of flavor scores and of oxidative stability of oils processed in the four-flask deodorizer

Flask 1	Flask 2	Flask 3	Flask 4	Signifi- cance
0 Time				
7.9(0.74) ¹	8.2(0.81)	7.8(0.84)	8.3(0.69)	+ ²
Storage — 4 days, 60° C.				
5.1(9.1)	5.5(8.5)	5.1(12.5)		+
5.7(6.5)			4.8(12.2)	+
5.0(8.2)			6.1(8.0)	+
	5.4(8.8)	6.0(9.7)	5.9(5.7)	+
	5.6(8.0)	5.5(6.5)		+
Peroxide values (A.O.M. conditions 8 hours)				
52.7	54.5	54.0	53.5	

¹ Values in parentheses are peroxide values at the time of tasting; the larger this value, the lower the stability.

² + No significant difference.

TABLE III
Effect of citric acid addition to soybean oil

Period of storage	Control sample		Citric Sample		Significance
	Score	Peroxide Value	Score	Peroxide Value	
0	8.4	0.4	7.9	0.3	+
6 weeks	4.9	8.9	7.9	1.1	**
12 weeks	3.6	31.5	7.5	1.8	**
18 weeks	2.6	38.3	5.8	4.1	**
24 weeks	2.8	40.2	5.2	31.2	**

* Significant difference — odds 20-1 or more that chance did not give the difference.

** Highly significant difference — odds 100-1 or more that chance did not give the difference. Aged in bottles two-thirds full; at room temperature, Peoria, Ill.; opened at 6 week intervals to admit air.

+ No significant difference.

termining if one sample of oil was superior to another. We still depend on flavor responses to tell us if an oil "reverts." Samples are aged in bottles two-thirds full for 1 to 5 days at 60° C. until a peroxide level of 2 or more is obtained. The samples are then submitted to the taste panel for evaluation. Taste panel members record data on a score sheet. These data are used to determine the standard deviations and to determine if the differences between samples are significant and real. The analysis of variance is used to determine if the differences are significant or highly significant, i.e., we determine if the odds are 20 to 1 or more, or 100 to 1 or more, respectively, that the differences observed are not caused by mere chance.

• The Laboratory's attack on a leading problem facing the industry. Author is head of the oil and protein division.

SEPTEMBER, 1949

In order to maintain surveillance on our taste panel, the performance of members is regularly checked by means of control charts, correlation coefficients, and regression coefficients. To show you how one of the methods of surveillance works, we have reproduced two scatter diagrams showing how a good and a poor taster compared with the panel average. In Figure 1, note that the scores of taster 8 are held to rather narrow limits and the angle of the solid line is approximately 45°. This person has a correlation with the taste panel of approximately 85 percent. Figure 2 shows that the scores of taster 12 are spread over wider limits; the angle of his solid line is approximately 28°, and his correlation is approximately 50 percent. Needless to say, we have retained taster 8 and no longer have taster 12 on the taste panel. Constant checks are run on our taste panel to improve it and new members are trained from time to time.

Simultaneously, it has been necessary to set up laboratory procedures which permit evaluation of proposed cures and give us a basis for attempting to determine the effect of various refining procedures on the oil. Since the paired-sample technique was adopted for taste panel work, it was decid-

TABLE IV
Effect of citric acid on added iron salt

Sample	Peroxide value	
	A.O.M. (8 hours)	Storage at 60° C. for 4 days
Control	41.1	3.21
Citrated sample	11.0	0.88
Citric acid plus iron added	14.7	0.63
0.3 P.F.M. iron added	57.3	5.56

TABLE V
Evaluation of samples from Plant B using citric acid¹

Citric acid treated	Control	Significant difference
Flavor score at 0 time		
6.5 (0.51)	5.8 (1.00)	+
After 3 days' storage at 60° C.		
5.9 (1.68)	3.1 (8.43)	**
Peroxide values (A.O.M. conditions - 8 hours)		
42.4	63.8	

¹ For explanation of symbols, see Table III.

ed to build our program around procedures which would permit refining, bleaching, and deodorizing four samples at once. There was nothing magic in four samples: four appeared to be the largest number of samples which could be deodorized (steamed under vacuum at 210° C.) under identical conditions. Four samples permitted us to have a control and three variables in every deodorization if we so desired. Figure 3 shows the laboratory deodorizer used for our work.

Table II shows how successful we have been in obtaining reproducible results. Note that all four samples vary in flavor score at zero time from 7.9 to 8.3 with no significant difference between samples. After aging to develop flavor and testing one against the other, the biggest difference between any two samples tasted as pairs was 0.6 and no significant differences are found. The extent of oxidation in the oxidizing tests at 100° C. varies between 52.7 and 54.5 peroxide value; this difference is not significant. The samples, you will note, are not identical although supposedly identical treatments were given. However, the differences between samples are not significant, i.e., they were probably caused by chance circumstances.

In addition to the taste panel evaluation we also have determined oxidative stability as measured by the peroxides in samples stored at 60° C., in samples after 8 hours at

Figure 3—Deodorizer assembly mounted on frame.

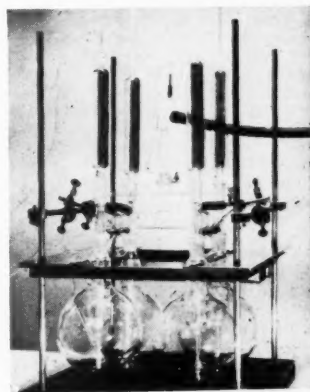


TABLE VI
Effect of the phosphatide concentration upon the initial flavor and upon the stability of soybean oil¹

0.05% phosphatide	0.1% phosphatide	0.2% phosphatide	Control	Significant difference
Flavor score at 0 time				
8.4 (0.49)	7.9 (0.40)	7.2 (0.46)		+
8.3 (0.57)			8.7 (0.62)	+
8.4 (0.46)				+
	7.7 (0.39)	7.0 (0.30)	8.3 (0.67)	+
	7.9 (0.49)	6.8 (0.00)	8.0 (0.50)	+
After 7 days' storage at 60° C.				
5.6 (8.32)	4.9 (8.87)	4.0 (4.64)	4.1 (28.57)	0.05 * 0.2%
Peroxide values (A.O.M. conditions - 8 hours)				
7.5	4.2	2.6	65.4	

¹ For explanation of symbols, see Table III.

TABLE VII
Effect of phosphatides upon the stability of soybean oil in the presence of added iron salt¹

Phosphatide (0.02%)	Iron (0.3 p.p.m.)	Phosphatide plus Iron	Control	Significant difference
Flavor score at 0 time				
8.0 (0.25)	7.1 (0.26)	7.5 (0.24)	8.3 (0.26)	+
After 3 days' storage at 60° C.				
6.5 (1.24)	3.9 (6.78)	5.9 (1.65)		++
6.8 (1.22)			4.9 (6.83)	++
6.5 (1.03)				++
	4.4 (6.32)	6.0 (1.25)	6.4 (7.36)	+
	5.4 (6.73)	6.1 (1.69)	5.7 (6.04)	+
Peroxide values (A.O.M. conditions - 8 hours)				
22.3	91.4	37.0	64.4	

¹ For explanation of symbols, see Table III.

TABLE VIII
Evaluation of samples from Plant C using sorbitol¹

Sorbitol treated	Control	Significant difference
Flavor Score at 0 Time		
7.3 (0.54)	5.5 (0.50)	*
After 3 days' storage at 60° C.		
6.5 (1.32)	4.8 (6.46)	**
Peroxide values (A.O.M. conditions - 8 hours)		
11.7	49.8	

¹ For explanation of symbols, see Table III.

100° C. with a stream of air passed through the sample (A.O.M.), and in samples stored at room temperature.

In 1945, Warren Goss, formerly a chemical engineer at the Laboratory, investigated the German vegetable oil industry and came home with a number of suggestions regarding soybean oil. Two of these suggestions were that lecithin is responsible for "reversion," and should be removed by repeated water washing, and that citric acid added during deodorization retards appearance of "reversion." Using the procedures mentioned above, we examined these two conditions and concluded that citric acid does improve flavor stability but it does not do so by inactivating the lecithin.

Table III shows how the flavor score of the oil changed on storage at room temperature. Note how the peroxide level increases immediately in the control sample but does not appreciably increase in the citrated sample for 18 weeks. Citric acid reacts with very small amounts of metals in the oils and prevents the action of these metals as catalysts for oxidation. One of the major offenders is iron and Table IV shows how citric acid reduces the oxidation in soybean oil as determined by the active oxygen method (A.O.M.).

Note that the use of citric acid improved both the control sample and the sample containing added iron. Citric acid added after deodorization also appears to be helpful and it appears to serve both as a metallic fixative and synergist for antioxidants in the oil.

Our immediate reaction to this work was that we should try it commercially. Through a cooperative agreement with Armour and

Co., and with other commercial refiners, we have tested the citric acid addition on a commercial scale. Table V shows the results of one commercial trial. The values in parentheses are peroxide from the samples stored at room temperature. Note also that the citric addition has improved the oxidative stability under A.O.M. conditions.

We have examined the water washing technique recommended by the Germans and found that it has no particular advantage. Others have checked us and published on this matter. Also, we have studied the effect of added increments of phosphates to the soybean oil. Table VI indicates that 0.05 to 0.2 percent of phosphatides improves the oxidative stability; 0.05 percent is significantly superior to the control and the 0.2 percent phosphatide. Apparently, our taste panel could detect 0.2 percent phosphatide and although the oxidative stability was improved, the phosphatides at this higher level did impart undesirable flavors. However, at 0.05 percent level the oxidative and flavor stability was decidedly improved, indicating that lecithin was probably a desirable factor in "reversion."

The demonstration of the effect of iron turned our attention to other possible metallic fixatives. Since phosphatides are phosphoric acid derivatives, it appeared reasonable to assume that they might function as metallic fixatives. Accordingly, four samples were prepared and deodorized. Table VII shows the results which we obtained. Note that no significant difference was found in the original oils by our taste panel. Our significant differences were found in aged flavor of the phosphatide and the phosphatide plus iron salt as compared with other oils. The oxidative stabilities including the A.O.M. values clearly show that phosphatides have some effect in counteracting the oxidizing effect of added iron.

This work led us to investigate a large number of compounds as metallic fixatives, and we can generalize that any polycarboxylic acid, polyhydric alcohol, and many strongly acidic compounds are effective as metallic fixatives.

(Continued on page 89)

WHAT DO

By OSCAR SKOVHOLT

Quality Bakers of America Cooperative, Inc.

IT IS A PLEASURE to meet with such a large group of agricultural producers. I was born and reared as a farm boy and still have those characteristics.

Partly by choice and partly by good fortune, I have been able to stay close to the problems of the farmer and food processor. I like to think of the chemist as a friend of both producer and consumer and that new developments, generally, including those in the field of emulsifiers are useful to both groups.

The title assigned me was not of my own selection. I accepted it, even though the word "synthetic" rather stands out and may have an unfavorable connotation to many people. Synthetic should not mean an inferior imitation of a natural product but something made to accurate specifications and to do a particular job very well. We now have many fields in which man-made materials are far superior to those previously available as obtained from natural sources.

It was hardly necessary to make such an issue of the word "synthetic" in beginning this talk since I know that it was inserted in the title merely to differentiate between the family of the monoglycerides and the polyoxyethylene stearate and similar types emulsifiers, but I did want to make an early mention of the idea that a synthetic material is not necessarily undesirable or inferior.

In discussing this subject, it may be well to assume a wide range in the amount of information you as individuals already have along such lines. Even at the risk of boring some of you, a basic review seems desirable.

What They Are

Emulsifiers are materials that aid in obtaining uniform mixtures of water and oil. We know that these two types of materials will not mix when in pure form. Emulsifiers can be used to secure dispersions of oil in water or of water in oil. They accomplish this by collecting at the interface between the oil and water particles since one part of the emulsifier is attracted to the water and the other part wants to mix with the oil. By mixing or stirring some oil into water with an emulsifier present the oil will break into small drops which will not recombine, to form an oil layer, because of the coating of emulsifier which gathers around each droplet. This coating prevents the attraction between oil droplets which is otherwise present and causes separation from the water into an oil phase.

Emulsions have been extensively studied by chemists for several generations. Today we are considering the function of emulsifiers in doughs and batters and these systems are somewhat more complicated than liquid mixtures. The fact remains, that in nearly all bread and cake produc-

SYNTHETIC EMULSIFIERS

Mean to Soybeans?

tion there is need for dispersing a fat into a water-flour mixture. Other ingredients play a part but our concern is as to how the fatty material can be made to do a most efficient job when incorporated into a system in which water is the solvent.

The importance of emulsifiers in cake batters was discovered about 20 years ago. It was then learned that by adding a small amount of a monoglyceride type of emulsifier to the fat, a considerably different type of batter resulted. This was the origin of the so-called "high ratio" cakes with considerably increased levels of sugar and eggs. It made possible the production of sweeter and more tender cakes by the more thorough distribution of the fat throughout the batter.

These high ratio shortenings have been frequently tried by the baker in the production of rolls and bread. They often showed to some advantage in certain rolls when a relatively high percentage of the shortening was used. There seldom was any real advantage for high ratio shortenings in bread since the amount of emulsifiers was too small and we now know that it was not of the best type for use in this way. This type of emulsifier, unmixed with fat, became available to the baker about 3 years ago. It could then be used in a higher proportion in relation to the fat level added. It was also learned that because of its high melting point, the use of some heat before addition to the dough improved its effectiveness. This meant an extra operation to the baker but this type of ingredient was being accepted as an improver of bakery products. The improvement was largely due to better distribution of the fat throughout the product.

At about this time, there was being introduced some types of partially steared sorbitols for use principally in cake production. They were also being tried in bread but before much headway was made, the polyoxyethylene stearates were brought out for use in such products. This type of emulsifier proved to be more useful in doughs, not only from the standpoint of producing an originally more attractive product but also one which retained its freshness characteristics for a longer period of time.

• How deeply will fat emulsifiers cut into the shortening market? Author is director of laboratory for Quality Bakers of America.

One of the problems of the baking industry has been the perishability of its products. As they acquired age in the bread or cake box, they would be less liked and so eaten in smaller amounts. A major objective has always been that of adjusting formulas and processing so that all baked products would lose less of their goodness before consumed and thus increase the demand. Some folks feel that a product which becomes unappetizing and is thrown out of the home increases the amount purchased because of this waste. I do not believe this is as important a factor as the slowing up of the rate of consumption due to products becoming less appetizing before the housewife replaces them with a fresh supply. In any event, it seems advisable to continue to reduce perishability by keeping products palatable until consumed.

Anti-Stalers

Both types of emulsifiers do reduce perishability when properly used, but all of our tests have indicated that the synthetic types are considerably the most effective in this respect, even though some of the monoglycerides as recently produced are an improvement over those originally made available to the baker. These materials have been called bread "softeners" but I do not consider this to be a very accurate description of their function. The effect of the emulsifiers upon softness is slight when the bread is fresh but they considerably reduce the rate of firming. Some of us have used the term "anti-staling" to describe this effect but still admit that no one can exactly define the change known as "staling." In any event, these emulsifiers do reduce the apparent age of bread which is desirable to most consumers.

In addition to the effect on keeping quality, most emulsifiers have an improving effect on the physical qualities of dough and batters. This in turn causes more even-grained products due to the formation of a larger number of air pockets with thinner cell walls from the leavening agents used. Doughs are made more pliable by this type of ingredient and so they respond better to the machining used in the modern bakery for the production of bread and rolls. A part of this effect is undoubtedly due to the more efficient use of the added fat. Some of it seems to come from the emulsifier itself or possibly from the effect of this material on the fat that is naturally present in flour.

When these so-called "synthetic" emulsifiers were first introduced into batters and doughs, there was a considerable shortage of fats and oils. Bakers had adjusted their formulas to produce all baked products with a lower fat percentage. They had been told that it was patriotic to do so. Even when it was possible for a baker to get all of the fat that was wanted, prices were tremendously high. Only by holding down on



OSCAR SKOVHOLT

amounts used was it possible for supply and demand factors to so come into balance as to create a reasonable price level.

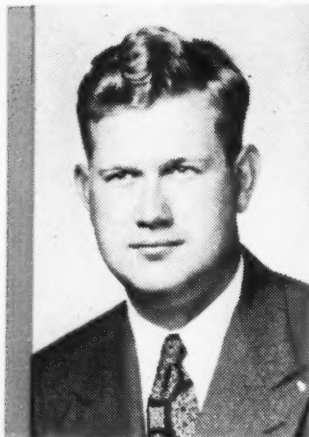
Some of these emulsifiers did a particularly good job in products with low fat levels. This is presumably because they increased the efficiency of the fat, as already mentioned. To sell these emulsifiers, many suppliers have stressed the possibility of fat reduction. This story is not new to the baking industry. Nearly everything new that is offered the baker is represented as being a total or partial replacement for one of the basic ingredients. The value of such replacements cannot be completely proved by comparative tests in the laboratory or bakery. The full story is not told until the consumer has indicated preference by the relative demand for the different kinds of baked goods on the market.

Effect of Fat Level

Most bakers who tried shortening reductions along with the use of emulsifiers in cakes soon found that any appreciable cut in fat level had changed the characteristics of the product. In appearance there was often an improvement by reducing fat level, but the decline in quality was especially noted in eating or chewing characteristics. Certain cakes of the sponge or angel food type are made without fat and are liked by many people but when cakes which have other properties due to their fat content, are made with less of this ingredient, there is normally a decline in demand. It is my opinion that most emulsifiers added to cake batters are now used with essentially a normal level of fat. If any reduction has been made, it is small in percentage in most cases. This reduction in demand for fat may be more than overcome by an increase in the consumer acceptance of the cakes which have been made better by the proper use of an emulsifier.

In bread production, the picture is a little more confused. There is a wide difference in the opinions of various bakers as to what is the best fat level for different types of bread. Some successful baking companies

(Continued on page 88)



PAUL C. HUGHES

PRODUCERS

Field Program OF THE AMERICAN SOYBEAN ASSOCIATION

By PAUL C. HUGHES

Field Director

AS THE FIELD service director I wish to report to you the activities of your field service division since I was hired by the Association in April 1948.

For the past several years it was felt by many people in the Association that if the soybean industry was to continue to grow and to be profitable over a long period of years, some type of strong well-financed organization was needed to promote soybeans, to protect the best interests of the industry and to educate the people concerning soybeans. Organizations of this type are not new. Successful examples are: The National Livestock and Meat Board, the National Cotton Council and the American Dairy Association.

The feeling of the need for such an organization became so strong in the Association that the board of directors began to approach the other segments of the industry and suggest to them that a joint effort be started to organize and finance such an organization. At that time many persons in the other segments of the industry could not see the need of such an organization. That was not the opinion voiced by the 1947 convention of ASA at Columbus in 1947. At that convention a resolution was passed directing the board of directors to proceed on their own to set up this program for the soybean industry.

The board of directors after much discussion with other successful commodity groups such as the National Cotton Council and the National Livestock and Meat Board, set up a very simple procedure to finance this organization.

The method of financing the American Soybean Association so that it might carry on the work of protection and building markets for soybeans was this:

They would ask the producers of soybeans to invest 1/5 cent per bushel or 20 cents per 100 bushels on a voluntary basis just as the American Dairy Association asks for 1 cent per pound of butterfat during the month of June and the Cotton

Council asks for 10 cents per bale of cotton.

There are far too many soybean producers to be reached individually. Even if it were possible to make contact with each producer the cost of collection would be greater than the amount collected. So it was decided to ask the buyer of soybeans to make the deductions at the time he makes the purchase. Again we were following the other successful commodity groups.

Ersel Walley, president of the American Soybean Association, then wrote a letter to all members of ASA asking for money to set the program in motion. The response was good enough that I was hired late in April of 1948 to start the program going.

What the Job Is

As the board of directors saw my job, it consisted of two things:

1—To get the soybean buyer to make the collections, and

2—To convince the producer that it was to his advantage to invest his 1/5 cent per bushel in the American Soybean Association.

Since it would do no good to convince the producer of the advantage of the investment if we had no means of collecting the money, and as time before the 1948 soybean harvest was short, it was decided that I would spend the summer months contacting elevators and getting them to agree to make the collections when the producers sold their beans.

A small area in central Ohio was selected as the test area and I began early in June to call on elevators in that area. Out of the 17 elevators contacted in the area, 12 of them agreed to make the collections.

It was then felt that our plan as set up would meet with acceptance by the majority of the elevator managers, so I went to work the last week of June in central Illinois, the most important soybean producing area in the country.

During June, July, August and part of September I called on 225 elevator managers, many of them two or three times before they were able to give me an answer. Out of this 225 elevators contacted, 121 agreed to make the collections, or better than 50 percent.

In the meantime after we were sure that the buyers of soybeans were willing to cooperate with us, we set out to convince the producer of the wisdom of investing his 1/5 cent per bushel in the American Soybean Association. It was thought that newspaper stories, leaflets and posters would help to tell our story to the producer. With that in mind, we sent out well over 1,000 copies of news releases on the finance program alone. During the fall and winter months over 3,000 copies of news releases were sent out to show that the American Soybean Association was trying to protect the best interests of the American soybean producer. In addition, we received some favorable stories in the major dailies of central Illinois.

We then prepared a leaflet with the title, "Your Investment with the American Soybean Association." Over 50,000 copies of this leaflet were sent out. Every elevator that cooperated with us received as many copies as he needed to supply his customers. A poster was put up in all of the 134 elevators that had agreed to make the collections apprising their customers of the fact.

After the main portion of the 1948 crop soybeans had moved, we sent a letter to all the members of the Association asking those who were not where they could invest their 1/5 cent through their local elevator to remit that or even more to the Association directly.

1948 Results

Let's now look at the results of our efforts in 1948.

The 134 elevators that had agreed to make the collections handled a total of 13,900,000 bushels of soybeans. If our collections had been 100 percent we could have collected \$27,800. However, to date our returns from the elevators have been \$2,687.47 or less than 10 percent of the total amount possible.

Meanwhile we have received directly from producers and other people with an interest in the soybean industry, \$6,881.50.

There is nothing that one can find fault with in the amount that was sent in directly by producers. But there was something wrong with the amount we received through the elevators.

To find out what was wrong, I began

• **By trial and error
a working program
of the
Association
based on close
contacts with
local groups is
taking shape.**

to call on the elevator managers and ask them why they hadn't been able to make the collections. Their answers were almost always the same. The producer was just indifferent to the whole thing. He wasn't convinced that it was to his advantage to make the investment.

In other words, our efforts to sell the producers on our program had failed. Our idea that a few newspaper stories, a leaflet and a poster could sell the producer had been wrong. Something else was needed to get the job done.

After much soul-searching on the part of your board of directors, your president and your field service director, it was decided that to get the "grass root" backing that was badly needed, the Association should hold local meetings, to appear at other local meetings where growers were present and to enlist the personal aid of more of our members and friends. Later it was decided that we should set up local committees to back the Association.

Local Meetings

It was decided that we would have our first local meetings in northwest Ohio. The Soybean Roundup Committee at Van Wert was kind enough to allow us to put on their program last February. Using that meeting as a nucleus, we also held meetings at Bowling Green and Kenton, Ohio. We had a total attendance of about 500 people at these three meetings.

It was our desire to start our program in the Delta area of Arkansas, Missouri and Tennessee in 1949. After the lesson learned from 1948 we proceeded differently. Instead of going down to sign up soybean buyers, we decided to hold meetings to convince the producer that he should make the investment. If these meetings were successful we would then go out and sign up the soybean buyers to make the collections.

With that plan in mind we held nine meetings in that area, four during the month of April and five during August. These meetings were held at St. Charles, Charleston, Malden, Sikeston and Portageville in Missouri; Blytheville and Paragould in Arkansas; Tiptonville and Ripley in Tennessee. We had a total attendance at these nine meetings of over 600 people. They were successful not only in attendance—the majority of the producers who were there left convinced that the American Soybean Association could do them some good.

Many soybean buyers were in attendance at these meetings and many others were already members of the Association.

After the meetings it was an easy matter to sign 34 handlers to make the collections for us.

This year, acting on past experience, we did not go after quantity in elevators but rather quality. Therefore, during the month of July, I contacted all of the elevators that had signed last year and a few others that we felt could make the collections this year. We now have 40 elevators who had varied amounts of success on collections last year. We hope for a better return with this year's crop.

I contacted again this summer, the elevators in Ohio who signed in 1948 and with the help of Mr. Walley, signed five in that state, to make collections, as well as four large elevators in Indiana.

All the while we have been making personal contacts we haven't given up the idea that we can help to sell our program through newspaper stories, leaflets, letters and posters.

Mr. Walley prepared a large yellow leaflet headed, "The Soybean." We have put out over 50,000 copies of that leaflet.



• **BOOSTS SOYBEAN YIELDS**
• **SAVES SOIL FERTILITY**

Year after year you try for bigger soybean yields . . . year after year you try to hold the fertility of your soil. To actually get both these results, always inoculate your soybeans with NITRAGIN. Ever since soybeans were first grown here as an important farm crop, NITRAGIN scientists have kept pace by providing better and better strains of soybean inoculating bacteria. Each year more and more farmers are using NITRAGIN inoculation because they know it gets results. Help stop soil robbing . . . don't take chances with your soybean acreage . . . always inoculate all the soybeans you put in. Use NITRAGIN, the inoculant in the yellow can—for sale at leading seed dealers.

THE NITRAGIN COMPANY, INC.
3871 N. BOOTH ST. • MILWAUKEE, WIS.

It was given out at all the local meetings we held. We mailed a supply to all of the elevators who worked with us last year hoping that it would sell some of the producers on the program.

Since last October we have sent out about 24,000 letters explaining the Association's program and asking for support.

Also last October to help remind you members of the Association's program, we began to run a cartoon each month in the Soybean Digest. Out of those cartoons came the character "Little Asa" who we hope will be with us for some time. He represents the hopes of the American Soybean Association. Watch him grow up.

It is my firm belief that with the lessons learned in 1948 we have, during 1949, started a sound foundation on which we can build a strong, well-financed organization to protect and expand the world of soya.

Before I close, I would like to point out some of the things that your board of directors and I feel yet need to be done to make our program successful.

First, we need stronger backing from the members of the Association, not in the way of money but in personal effort. I mean effort to see that your soybean buyer is sold on the program—effort to convince your neighbors and friends of the advantages of the Association. If the soybean buyer in your area is making the collection, he needs encouragement. If our own members will not give him support, who will?

Second, we need local committees to push the Association. An effort will be made this fall and winter to form such committees. Again it is hoped that our members will take the lead.

Third, we need more local meetings. The ones held this year should be only the beginning of such meetings. We are counting on our members to serve as chairmen of such gatherings and to help us set up the meetings and help get out a crowd.

Fourth, we need to get the other segments of the soybean industry to join with us in a united effort. The job is too big for any one segment to carry alone.

M. F. KERNKAMP



Lesions caused by *Rhizoctonia Solani* on soybean stems. Note the inferior root system in 1. Number 4 is the uninoculated control.

ROOT ROTS OF SOYBEANS¹

By M. F. KERNKAMP

BEFORE the soybean disease problems in Minnesota can be properly understood, it is necessary to know something about the history of soybean production in this state. Therefore, let me digress a moment to give a few figures on soybean production in Minnesota. In 1942 the yield was approximately 600,000 bushels. In 1948 the yield increased 26-fold to 15,200,000 bushels. This phenomenal increase in soybean production was stimulated primarily by wartime shortages of vegetable oils.

Regardless of the stimulus, the fact remains that soybean culture increased from a few fields here and there to intensive production in certain areas of the state in only 6 years. When a new crop comes into a new area, new pathological problems invariably accompany the crop. At first the crop is relatively free of diseases, but with intensification and concentration of host plants, diseases become more prevalent.

The agricultural scientists of the Minnesota Agricultural Experiment Station and the division of forage crops and diseases of the U. S. Department of Agriculture foresaw coming events pathologically speaking, and therefore, set up a cooperative project at the University of Minnesota to study diseases of soybeans. This project was established in 1943 and has been in operation since that time. As I hope to point out later, the principle of preventing plant diseases before they get started is illustrated exceptionally well in this case history, because when the project was begun, there were no soybean diseases that caused actual losses in farmers' fields. During the past 2 or 3 years many types have been observed, and last year root rot was

prevalent in many fields. Fortunately extensive field experiments made during the last 3 years have indicated good control measures.

The first step in the operation of the soybean disease project was to make disease surveys in farmers' fields throughout the state even though diseases were not causing any losses or yield reduction. Various diseases were found in negligible quantities. These included damping-off of seedlings, root rots, several bacterial leaf spot diseases, several mosaics caused by viruses, and downy mildew.

Isolations of the causal organisms were made in the laboratory and preliminary tests of pathogenicity were made in the greenhouse and in field plots. These preliminary tests indicated that root rots and damping-off were potentially the most destructive diseases of soybeans in Minnesota. And it appeared that the damping-off and root rot caused the fungus *Rhizoctonia solani* was potentially the worst enemy among the various soil-borne fungi.

In view of these preliminary results and in order to make observations of diseases before they became prevalent in commercial fields, a disease garden was established at University Farm on a piece of land that had been cropped to soybeans since 1942. This piece of ground was inoculated with many cultures of *Rhizoctonia*, which had been grown in the laboratory and then were spread out over the field. Soybeans are planted in this field every year in order to observe the development of root rot as well as other diseases.

Rhizoctonia solani causes both damping-off of seedlings and root rot. Damping-off,

¹ Paper No. 669 of the Miscellaneous Journal Series of the Minnesota Agricultural Experiment Station.

• Significant work on soybean diseases and seed treatment is being done at University of Minnesota where author is associate professor of plant pathology.

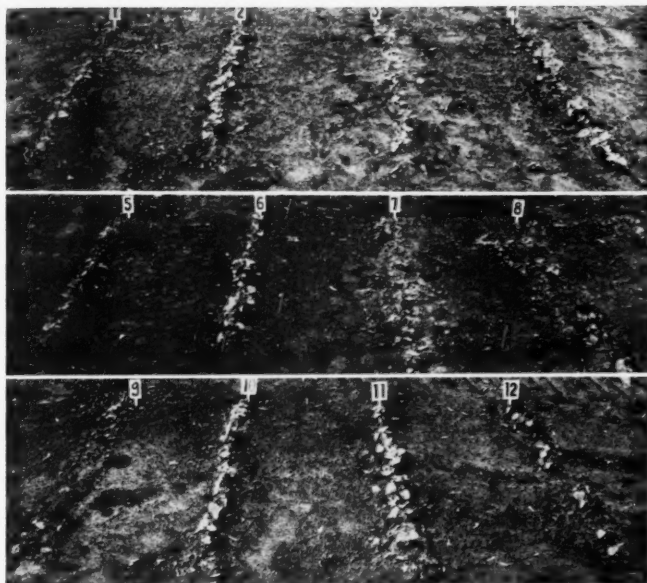
as the name implies, is killing of seedlings following infection of young shoots before or shortly after they emerge from the ground, whereas root rot is characterized by infection and deterioration of the root system of plants. Thus there is a considerable range of symptoms that may result from infection with *Rhizoctonia solani*.

The most drastic effect is failure of the seed to germinate. In such cases the seed becomes infected with the fungus and becomes a soft mass of decayed tissue. Often seeds germinate and the young sprouts become infected and killed before they emerge from the ground. Stems of seedlings that do emerge from the soil often become infected at ground level. In this type of infection there are elongated reddish brown lesions with an abrupt margin, and they are of rather dry consistency. In severe infection the lesions may girdle the entire stem and kill the plants. Older plants also are subject to the same type of infection where complete girdling of the stems at ground level kills them. Finally, the root system may become partially or entirely invaded by the fungus and eventually the plant dies.

Examination of infected tissue shows that the hyphae (fungus threads) not only penetrate directly into the cells of the host and kill them, but, also, produce a toxin or poison that can kill cells without the fungus actually being in contact with them. When this poison is extracted from cultures of *Rhizoctonia* and applied to seedlings, in the absence of the fungus, it prevents formation of roots on the plants.

Not only does *Rhizoctonia solani* cause several types of symptoms on soybeans, but it has an extremely wide host range and is comprised of many races or strains that have different pathogenic capabilities. Practically all of the crops that might be included in a rotation with soybeans are attacked by *Rhizoctonia solani*. These include all types of peas and beans, sweet clover, alfalfa, flax, sugar beets, potatoes, oats, barley, corn, and wheat. At the University Farm we have isolated *Rhizoctonia* from all of these crops and have infected soybeans with the isolates. Obviously these results demonstrate the difficulty of using crop rotations successfully for controlling soybean root rots.

The degree of infection varies greatly with the individual cultures of *Rhizoctonia solani*, which means that there are an indefinite number of pathogenic races of the fungus. Some are weakly pathogenic, while others are extremely virulent on the same variety of soybeans. Likewise one



The effects of *RHIZOCTONIA SOLANI* on soybeans in inoculated field plots. Row No. 4 is the uninoculated control and the remaining rows were inoculated with different strains of the pathogen. Note that in rows 7, 8, 9, and 12 there is almost complete failure of emergence.

variety of soybeans may be completely resistant to one race of the fungus and completely susceptible to another race of the fungus.

The wide host range and the presence of many pathogenic races greatly complicate the development of control measures. Progress, however, has been made. As pointed out earlier, the soybean disease project was established before epidemics of soybean diseases had been observed in the farmers' fields. This has enabled us to establish epidemics in experimental plots and make tests on control measures under epidemic conditions before they occurred in commercial plantings.

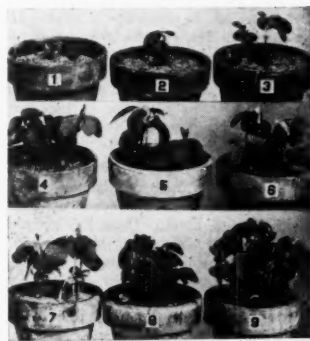
Control measures logically follow three distinct courses: (1) rotation, (2) seed treatment, and (3) breeding for disease resistance. Since the causal organism has such a wide host range, rotation practices may not be practical. However, tests are under way to determine this possibility.

Seed treatment tests have been made each year since the project was started, and show very promising results. Certain seed treatments, although I am not prepared to say specifically which ones, give almost complete control of damping-off when treated seed is planted in inoculated plots. At the present time, rates of application of some fungicidal dusts are too high to be commercially practicable, but they control damping-off and could be used if the situation is urgent enough to warrant such application.

Progress has also been made along the lines of breeding for resistance to root rot and damping-off. Each year, in cooperation with Dr. J. W. Lambert of the division

of agronomy and plant genetics, breeding material is grown in the disease nursery for observation on the development of all diseases of soybeans in this area. These breeding selections are also given a severe test for resistance to *Rhizoctonia solani* in the greenhouse in the winter. Two years ago several plants from about 40 selections survived the greenhouse tests. These plants were grown to maturity, the seed saved and increased in the field in 1948. This year plants from that seed are being tested in the field for resistance to *Rhizoctonia*. Certain selections appear to be resistant in these tests, indicating that resistance is available in some of the breeding material.

The results of inoculating soybeans in the greenhouse with different strains of *RHIZOCTONIA SOLANI*. 1-8 inoculated, and 9 uninoculated control.



SOYBEANS IN ONTARIO

By C. W. OWEN

Assistant Forage Crops, Department of Agriculture Experiment Station, Harrow, Ontario

A BRIEF description of our Dominion Experimental Farm Service might be of interest to you. For 63 years, since 1886, this service has conducted a comprehensive program of agricultural research, carried to the point of direct farm application and aimed at maintaining Canadian agriculture at the highest possible levels of productivity and efficiency.

At present, this service comprises some 29 experimental farms and stations, 12 substations, 52 district substations, 155 illustration stations and 9 branch laboratories. These units are distributed across Canada in districts where useful research work may be accomplished.

The headquarters of the service are located at the Central Experimental Farm at Ottawa, Ontario. Within the service the many phases of agriculture are considered under divisions such as animal husbandry, field husbandry, cereals, forage crops, horticulture, poultry, bees, etc.

In addition to the Central Farm at Ottawa, two other stations are located in the province of Ontario, one in the north at Kapuskasing, and one in the southwest at Harrow. Other institutions conducting soybean investigational work are the Ontario Agricultural College at Guelph and the Provincial Experimental Farm at Ridgetown.

In the geography of the province of Ontario, you will be familiar with the peninsula which extends in a southwesterly direction towards your Michigan-Indiana state line. This peninsula is bounded on the north by Georgian Bay, on the west by Lake Huron, the St. Clair River, Lake St. Clair and the Detroit River and on the south by Lake Erie. As the tip of the peninsula is approached, the length of growing season naturally becomes longer until finally in Essex County, at the extremity, we find the longest growing season in the most southerly part of Canada. The station to which I am attached is located at Harrow in Essex County, some 25 miles south of the cities of Windsor and Detroit. To illustrate our seasonal conditions at Harrow, the 29-year average shows a frost free period of 159 days, a rainfall of 26.56 inches and total sunshine of 2024.7 hours.

Soy District

The soybean district in Ontario naturally spreads out from the longest season area in Essex and the county of Kent, which adjoins Essex. These two counties grow more than 70 percent of the present total acreage while the three neighboring counties of Elgin, Lambton and Middlesex, are the other large producing counties. Through the development of early maturing varieties, which work is being

conducted by the Central Farm at Ottawa, and the efforts of commercial soybean processors, other sections of the province are being interested in the production of soybeans and much remains to be done in this direction.

At the time soybean experimental work was started at Harrow in 1924 and at Ottawa in 1928, little interest was shown by farmers in this crop. Varietal and cultural tests together with some plant selection work comprised the early efforts with soybeans. This resulted in the production of two varieties A.K. (Harrow) and Mandarin (Ottawa) which are still being used by the growers. Plant improvement by hybridization began at Harrow in 1931 and at about a similar date at Ottawa. At this time, no other similar work was being conducted in Canada and, largely through the results of these early years of testing and varietal improvement, the rapid expansion of soybean growing was made possible at a time when the qualities peculiar to soybeans were vitally important.

The expansion of acreage devoted to soybeans in Ontario took place quite rapidly. Previous to 1941 this figure was fairly constant at 8,000 to 10,000 acres per year. The succeeding years' acreages and production will illustrate the rapid development of this crop.

ONTARIO SOYBEAN ACREAGE and YIELD

Year	Acreage	Yield in Bushels
1941	10,900	216,000
1942	41,490	912,000
1943	47,000	874,000
1944	44,700	845,000
1945	46,000	842,000
1946	59,200	1,072,000
1947	61,000	1,110,000
1948	100,000	1,824,000
1949x	120,000	2,250,000
x Estimate		

From these figures it will be noted that during the 2 years 1942 and 1948, great acreage increases were experienced with the present season having the largest acreage to date. Factors contributing to this expansion were the demand for proteins and vegetable oils during the war years and the low labor requirements of soybeans at a time when labor was scarce. The establishment of a large processing plant created the demand for soybeans and a promotional campaign conducted by this company inspired many farmers to plant soybeans for the first time. I believe that most of these farmers are still growing soybeans, many with increased acreage, and many new growers are being added each year.

With the greatest percentage of the present acreage concentrated in the counties of Essex and Kent, future development of new acreage will be influenced by the production of new varieties suitable to districts having shorter growing seasons. With this in mind, the breeding program at Harrow has been directed along lines to serve these districts as well as our immediate locality.

While this station is located in the longest season district, much of the material coming from the breeding work is of an earlier maturing type. These new strains are tested at Harrow and the most promising are then included in a series of small tests located with interested growers, and extending from Essex County eastward to Norfolk County, some 170 miles distant.

While these tests are necessarily small, they have been located in promising soybean growing districts and have been valuable aids in the release of two varieties

A typical soybean field in southern Minnesota.

—Photo courtesy University of Minnesota





C. W. OWEN

• Canadian soybean production is concentrated in a few Ontario counties. The work is of interest to the northern U. S.

Harman and Harly. The Harman variety, released in 1944, occupies a considerable amount of the acreage in its adapted area. The Harly variety, released in 1948, is expected to fill a need in sections of the district requiring an earlier maturing variety. Seed of this variety is still being multiplied; about 75 acres being grown this year.

Over the years in which variety tests have been conducted at Harrow a number of U. S. productions have been included. While many of these were found to be unadapted to our conditions some are being used at present. A survey of the proportional use of varieties in the main section of our soybean belt shows the following distribution this year.

Harman	25 percent
Lincoln	20 percent
A. K. (Harrow)	15 percent
Mandarin	15 percent
Earlyana	10 percent
Capital	5 percent
Hawkeye	5 percent
Others	5 percent

While your varieties Earlyana and Hawkeye will mature over a considerable portion of our district the Lincoln variety must be confined to reasonably early planting in the longest season sections. At this

station we feel that Lincoln is a trifle hazardous for use but a considerable amount is being grown even though immature seed with consequently low germination has been harvested in some years. In the shorter season sections of the district we find a larger proportion of the Mandarin, Capital and Earlyana varieties with our newly released Harly coming into production at present.

Variety of Soils

Soybeans are being grown in Ontario on various soil types varying from clays to sands and muck. Cultural practices are very similar to those in the United States with the majority of our crop being planted in cultivated rows. The publicized results of work conducted by the station have contributed in a large measure to the row planting practice. Width of rows varies according to the machinery available on the farm with many using a 28 inch spacing. In the rotation, soybeans generally follow corn and may continue for 2 or 3 years.

Considerable work remains to be done on the maintenance and rebuilding of some of our heavier types of soil and a substation has recently been established at Woodslee in central Essex County for this purpose. Soybeans have been included in most of the rotations laid down in the plots at the substation.

While rotations at Woodslee have not all completed their cycle, since the substation was opened only in 1946, no appreciable increases have been noted in the yields of either corn or soybeans by direct applications of complete fertilizer to date. This soil has been seriously depleted of organic matter and future results are being watched with interest as this deficiency becomes corrected. On this substation, a strain and variety test is being conducted together with a test involving two varieties planted at three rates, (30, 60 and 90 pounds per acre), in rows spaced 24 and 30 inches apart. The results of 2 years' tests have indicated a slightly higher yield for the lightest seeding rate of both varieties. The light seeding rate also gave the least amount of lodging at harvest time which became quite serious at the heaviest rate. This was particularly evident in the taller growing variety.

In general, our cultural practices and problems are very similar to many of those in comparable sections of the United States soybean belt. The more experienced growers have solved many of their own problems and new growers are benefiting by the experience of others. The increasing availability of combines throughout the district has contributed to the increase in soybean acreage through the provision of adequate equipment for harvesting. As other districts are developed, new problems, particularly of adapted varieties, will be encountered but with the experience already gained, these should be solved without too much difficulty.

The disease picture in Ontario is being studied at the Plant Pathological Labora-

tory at Harrow under the direction of the science service of the Department of Agriculture. Briefly, our situation is that we have observed most of the common soybean diseases at some time but none of these have reached epidemic proportions. Each season appears to present a different situation in respect to diseases but in few instances have these been observed to greatly influence final yields. Some seed treatment work has indicated that with seed of low quality certain dust treatments have increased germination and this information is valuable when weather conditions influence the quality of seed harvested. As the soybean crop becomes more established in this district more disease difficulty may be encountered but this situation is being closely watched. The influence of disease on reducing soybean yields in Ontario has been remarkably small thus far.

In as much as a member of our department has demonstrated that soybeans, used as a previous green manure crop, have had a marked influence on the prevalence of root rot in a succeeding crop of strawberries it seems possible that a similar reaction may be obtained with other diseases on other crops. While this affect may be incidental to the other qualities of soybeans as green manure, I believe that this use for soybeans is increasing to some extent particularly on high value land devoted to cash crops.

While the practice is not widespread, the herd of Jersey cows maintained at the Harrow Station have been fed a percentage of whole cracked soybeans in the meal mixture for the past 10 years with satisfactory results. This practice began when soybean oil meal was not generally available and the excess seed from the breeding work was used in this manner. General farm practice at present is to utilize soybean meal either alone or in commercially mixed feeds.

From this brief review of the soybean situation in Ontario, I hope that I have been able to convey to you an impression of the present status of the crop. The figures for acreage indicate that we now have a sizeable acreage devoted to soybeans and I feel certain that development will be made in other districts as time goes on. To one who has had faith in the crop and worked with it during "the lean years," a great amount of personal satisfaction is derived from the present importance of soybeans. We can grow soybeans in Ontario and produce reasonable yields of good quality seed. A statement made to me by a grower a few years ago was that "over a crop of 300 acres, my average yield was 37.5 bushels per acre" will illustrate this point. The fact that the variety used was A.K. (Harrow) does not detract anything from receiving such reports as this even though all crops do not come up to this mark.

We in Canada enjoy and appreciate your publication, the Soybean Digest and obtain much valuable information from its contents. Only recently, an article published some time ago was useful in connection with a minor element deficiency in a local crop.

SOYBEANS AND THE FERTILITY LEVEL

By G. M. BROWNING

Iowa State College

IT IS COMMON opinion that soybeans are an erosion hazard on sloping land. They are, but so are all other clean-tilled crops such as corn, tobacco and cotton. The real question is: are they more of an erosion hazard than other clean-tilled crops? Studies in Iowa, Missouri and Illinois show that land in soybeans is no more erosive than land in corn if they occupy the same place in the rotation. The Soil Conservation Service and the Missouri Agricultural Experiment Station found that when both soybeans and corn followed meadow in the rotation that soil loss was actually somewhat less from soybeans than from corn.

Why, then, is it a common opinion that soybeans cause more erosion than corn? They usually follow 1, 2 or more years of corn in our rotations. Studies throughout the country show that there is from one-fourth to twice as much erosion from second-year corn land as from first-year corn. The actual amount depends on the soil slope and rainfall conditions. The larger soil loss from second-year corn is easy to understand if we remember that improved soil tilth from meadow in the rotation largely disappears during the first year of corn.

What we have done is to say that soybeans are more erosive than corn while what we should have been saying was that the greater soil loss from soybeans is due to the place they are grown in the rotation rather than a direct effect of the soybeans themselves.

Let's look at some of our Iowa data. Over a 4-year period on Marshall soil soybeans cause less erosion than corn when grown under comparable conditions. We compared runoff and erosion from corn and from soybeans with different methods of planting and tillage practices. These results are shown in Table I. When corn and soybeans were listed up and down the hill, 19.5 tons per acre of soil were lost from corn and 7.8 tons from soybeans—more than twice as much from corn as

from soybeans. On the contoured plots the soil loss was 3.3 tons per acre from corn and 2.7 tons from soybeans.

In both cases erosion from soybeans was less than from corn. Perhaps the most important point here is that erosion from contoured land is only 17 percent as much from corn and 35 percent as much from soybeans on land farmed up and down hill.

Another point of interest in this table is that there is more erosion from soybeans surface-planted in 40-inch rows than when they are planted with the lister. Unfortunately, listing isn't practical on soils where most of the soybeans are grown. It will work and is the common practice in Western Iowa, Kansas and Nebraska.

The lowest soil loss of any method of planting soybeans is when they are drilled solid in 7-inch rows. It is easy to see why erosion is not so serious when soybeans are planted with the grain drill. Within a few weeks after the beans are drilled, the plants completely cover the ground. This protects the soil from the beating action of the raindrops. The surface isn't sealed and crusted over. More of the rainfall is absorbed and less erosion occurs.

Studies over a period of years have shown that there is a large reduction in runoff and erosion if the soil is protected from intense rains by vegetation or by plant residues on the surface. This is what we would expect because if water goes into the ground it doesn't run off; if it doesn't run off, then there is no erosion. I should have mentioned earlier that in our studies in Iowa the soybean straw was all returned to the surface when the beans were combined. This is a very important point which I should like to emphasize.

Don't Burn Straw

Anyway you look at it the straw from soybeans should go back on the land. I become very much concerned when I see farmers raking and burning soybean straw or any other plant residue. It costs money to rake and burn. Even more important is that a ton or ton and one-half of badly needed organic matter is not returned to our soils to say nothing of the 20 or more pounds of nitrogen that is liberated into the air and of no benefit to the succeeding corn or oat crop.

I can understand why farmers rake and burn soybean straw when it is in large bunches rather than spread uniformly over the entire field with a good spreader on the combine. Any of you that have tried to plow through large bunches of soybean straw after they have been soaked with

water understand why farmers burn instead of plowing it down.

Good spreaders on combines and rolling coulters on plows help eliminate the need to burn. I don't know if we have the right kind of spreaders. What about a shredder attachment on the combine to chop the straw? The power may limit such a possibility on combines driven from the power takeoff. This shouldn't be a factor on combines with an auxiliary motor. Maybe this isn't practical but our agricultural engineers and machinery manufacturers surely could give us this answer.

Leave Soil Loose

I know that most of you have observed how loose and mellow the soil under soybeans is as compared to adjacent fields of corn. Why is this and is it good or is it bad? On light-textured soils low in organic matter and where the soybean residue is removed or not spread, it can be bad. Erosion may be very serious. But if the straw is there to protect the soil during hard, driving rains, the surface being loose and open allows the water to penetrate rapidly and erosion will not be serious.

On heavy clay soils the loosening effect of soybeans is good under our present farming practices with high acreages of intertilled crops that leave the soil cloddy and hard to work. Legumes and grasses regularly in the rotation will help to mellow up the soil but we haven't used enough of them and probably won't for some time.

A crop of soybeans helps mellow up these soils. Why? In the first place, soybeans make a rapid growth. The soil surface is soon protected from the beating action of the raindrops.

The second way soybeans loosen the soil is through their effect on soil moisture. The root system of the soybean plant is not as extensive as the corn plant. They make very rapid growth in July and August. With the rapid growth and limited root system, the moisture content of the soil is depleted faster than under corn. We found soil moisture from 5-7 percent less under soybeans than under corn. The soil is dried out by the soybeans. Then it rains. This wetting and drying, if repeated several times during the season, breaks down the large clods into smaller granules. This has the same effect on the soil as freezing and thawing. That is why we plow heavy clay soils in the fall. If plowed in the spring, heavy clay soils are cloddy and difficult to work down into a good seed bed. When plowed in the fall, alternate freezing and thaw-

TABLE I

Soil Erosion From Corn and Soybeans With Different Tillage Practices. Marshall Silt Loam, Soil Conservation Experimental Farm, Clarinda, Iowa, 1944-47.

Tillage Method	Soil Loss T/A	
	Up-and Down Hill	Contoured
Corn listed in 40" rows	19.5	3.3
Soybeans listed in 40" rows	7.8	2.7
Soybeans surface-planted in 40" rows	8.9	4.9
Soybeans drilled in 7" rows	3.5	2.9

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• Soybeans offer about the same erosion hazard as any other clean-tilled crop. You can grow them and still increase soil fertility and control erosion with the proper system.

ing breaks down large clods into smaller clods or granules. By spring the soil has better tilth and it is much easier to prepare a good seed bed.

The third way that soybeans loosen soil is through the action of nodules and roots. The nodules are very high in nitrogen. They form and disintegrate throughout the entire growing season. The nitrogen liberated serves to stimulate activity of the millions of organisms that are in the soil. The remains from these organisms furnish a supply of material to help bind small particles together into granules. This effect is similar to the bind action of grass and legume roots.

We would conclude, then, that in most cases soybeans are more favorable to soil tilth than corn. The exception may be on our light soils low in organic material where the soybeans leave the soil too fine and too loose for good soil tilth. We should remember, though, that in general intertilled cropping destroys soil structure—grasses and legumes are structure builders.

Soil Fertility

From the standpoint of erosion the least we can say is that any clean-tilled crop on sloping land is an erosion hazard. It doesn't mean that we have to quit growing them to control erosion and maintain soil productivity. There is plenty of evidence to show that the right rotation with lime, fertilizer, and supporting conservation practices such as contouring, strip cropping and terraces if and when needed,

G. M. BROWNING



will control erosion and maintain soil productivity indefinitely.

Legumes After Soybeans

A common belief among farmers is that grass and legume seedlings following soybeans fail more often than seedling after corn. Is this the case? It may be in dry years when the land is not firmed with a cultipacker. There is no question that soybeans leave the land loose. It is easier to get a good seed bed after soybeans than on corn stalk land. But if it is loose and dry weather occurs, the surface 2 or 3 inches of soil dries out and seedlings may fail.

Over a period of years meadow seedlings on our experimental farms have been better following soybeans than following corn. We always use a cultipacker to firm the soil at seeding time. This results in better stands and helps eliminate the danger of seeding failures during extended periods of drought.

Corn Following Soybeans

We have many reports from farmers that corn doesn't yield as well after soybeans as after corn. In Iowa in 1942 and 1943 we compared the yields of corn following corn and following soybeans on 30 different fields. We selected sites where part of the field was in corn and part in soybeans. The entire field was planted to corn the year yields were taken. The soils were Clarion and Webster of northern Iowa. These same soils are also found in southern Minnesota and the results should apply equally well there. We found that on 16 fields on the Webster soils that corn following soybeans outyielded corn following corn by an average of 8.4 bushels to the acre. On 14 fields of Clarion soil the increase was 7 bushels per acre in favor of corn following soybeans. The increases for industrial fields varied with past soil management practice, but in no case were the yields higher following corn than following soybeans.

The higher yields of corn after soybeans than after corn is probably due to more nitrogen being available after soybeans. Soybeans are a legume and if inoculated fix nitrogen from the air. Studies show that if the beans are removed and the straw returned to the land, the amount of nitrogen fixed by the plant is about equal to that sold in the beans. So we break even. This is small compared to a 50-100 pound per acre increase in nitrogen from a sweet clover or alfalfa crop but it helps.

What about corn? It is a non-legume crop and gets all of its nitrogen from the soil. If the stalks are returned and the grain sold, a 60-bushel corn crop removes about 60 pounds of nitrogen from the soil. This is equivalent to the nitrogen in 180 pounds of NH_4MO_3 at a cost of about \$7.

Oats Following Soybeans

We also have information on the effect of soybeans on the yields of oats following corn in contrast to oats following soybeans. In years when temperature and rainfall conditions are normal, there us-

ually is little or no noticeable difference in the growth or color of the oat crop after corn or soybeans. In northern Iowa, southern Minnesota and other places through the Cornbelt, cold, wet springs are common. Biological activity is limited. Nitrogen is not liberated. The oats turn yellow and make little growth. This spring, 1949, was an excellent example of this. You will all recall how poor most of the oat crop looked early this spring. The yields weren't as high as usual either. I imagine that you noticed just as I did that there would be an occasional field of oats that was dark green and making excellent growth. Had you bothered to check you probably would have found that these oats were on land that had been well managed and with legumes and manure regularly in the cropping system. Or perhaps they received nitrogen fertilizer. In some several cases you would have found that the good fields of oats were on soybean land or on land that had been plowed.

The better growth of oats after soybeans may be explained this way. Soybeans leave the soil loose, it dries out quicker, and warms up faster than land that was in corn. This stimulates biological activity. This liberates the nitrogen in the soybean straw for plant growth. Our studies on Marshall soils in southwestern Iowa show the yield of oats to be 4 or 5 bushels higher after soybeans than after corn in years when growing conditions are unfavorable.

Conclusions

Soybeans are an erosion hazard but no more than any other clean-tilled crop. By using rotations, lime, fertilizer and mechanical conservation practices if and when needed on sloping land, there is no reason why we can not continue to grow any or all of our intertilled crops and still maintain soil productivity.

Don't burn soybean straw or any crop residues. Our soils need the nitrogen and organic matter. Soybeans fit well into Cornbelt rotations. They are here to stay. The time of planting and harvesting soybeans fits well into a farming system with corn and oats and meadows. Soybeans require soil nutrients just as any other crop. But they are a legume and fix some nitrogen from the air. If the straw is returned, the nitrogen removed is about equal to that sold in the seed. Corn and other non-legume crops take all of their nitrogen from the soil. The yield of crops following soybeans are almost always as good and usually better than when they follow corn. Soybeans leave the soil loose. This is usually a better seed bed for grasses and legumes than after corn. But regardless of the crop grown, a cultipacker to firm the soil is good insurance of getting stands of grasses and legumes—the key to soil fertility.

Soybeans are one of the important crops in our cornbelt agriculture. They fit well in a good crop, soil and livestock management system that will increase soil fertility, control erosion, and maintain high soil productivity for a permanent agriculture.

What Inoculation Does FOR SOYBEANS

By LEWIS W. ERDMAN

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MORE THAN 60 years have passed since the discovery by Hellriegel of the beneficial association of bacteria with legumes, proving beyond any question of doubt, that with the help of these bacteria this great family of plants is able to use the nitrogen from the air as well as from the soil and in addition enrich the soil in which they grow. This epochal discovery had such tremendous practical implications that, almost immediately, numerous laboratory and field studies were started in this country and in Europe to learn more about the activities of these microorganisms now known to most agriculturists as legume bacteria.

The record shows that it has been some time since this subject has been discussed at an annual meeting of the American Soybean Association. Consequently for the benefit of those newcomers in the production end of the soybean industry it should be in order to tell what is meant by inoculation. Inoculation of soybeans means the introduction of the proper soybean bacteria into the soil so they can enter the plant roots, form active nodules, and fix nitrogen from the air. This will increase the production of the crop whether for hay or for seed, and also will contribute under certain conditions to the improvement of the soil.

Characteristics of Soybean Bacteria. *Rhizobium japonicum*, more commonly called the soybean bacteria, are real specialists in their field—they are in a class all by themselves. They refuse to work or associate with any other legume—they are specific for soybeans. Some strains are much more efficient than others in fixing air nitrogen. As far back as 1900 it was noticed that the nodules of plants inoculated with pure cultures were more active than those produced by bacteria already in the soil.

Some soybean bacteria do better on certain soybean varieties than others and there is evidence that adaptation of strains of bacteria for different varieties in a given locality may be an important factor. Also plant breeders striving for increased quality, protein and oil content of soybeans may alter the genetic factors within the plant that control acceptance of the bacteria which form the symbiotic nitrogen-fixing relationship. Future research on these problems will enable us to better understand the workings of these and other legume bacteria.

Soybeans are grown in Cornbelt soils

at a time when there is a maximum production of nitrate nitrogen by soil organisms. When nitrate is present, soybeans will utilize it and the need for nitrogen fixation by the soybean bacteria is lessened. This no doubt accounts for the relatively small amounts of nitrogen which is fixed by soybean bacteria as compared to that fixed by alfalfa and sweet clover bacteria. It is known to be a fact that a 25-bushel soybean crop requires about 125 pounds of nitrogen. Data are on record which show that not more than 50 pounds per acre are fixed from the air by soybean bacteria under Cornbelt conditions. Higher yields of soybeans, therefore are produced at the expense of soil nitrogen or from the addition of nitrogen in fertilizers.

The ability of the soybean bacteria to fix nitrogen from the air is also governed by the carbohydrate-nitrogen relationship in the plants. Wilson found that the greatest fixation occurred when there was a medium carbohydrate-low nitrogen relation. When both the carbohydrate and nitrogen were low the fixation was restricted. With a high carbohydrate-low nitrogen relation nitrogen fixation is inhibited to some extent.

Effect of Light

Light intensity, also directly related to the carbohydrate-nitrogen relationship, is another factor which influences nitrogen fixation in soybeans. Under optimum light conditions in the greenhouse an effective culture of the soybean bacteria will function normally and fix nitrogen. If this same culture is used to inoculate soybeans in the field where too great light intensity prevails for an excessive period of time poor results from inoculation might be obtained. In normal weather when bright days alternate with cloudy days excellent results from the inoculation will follow. In other words, we know now why it takes a little rain with the sunshine to produce good inoculated soybeans.

Effect of Inoculation on Growth, Yield and Feeding Value of Soybeans. Since measurement of the benefits from soybean inoculation are generally expressed in records on plant growth, seed yields and protein content, let's first examine a few reports from foreign countries. Down in Uruguay, Canel noted that inoculation increased the protein content of soybeans and studies were in progress on the selection of strains of *Rhizobium japonicum*

more suited to their local conditions. In Argentina, Schiel and Marco studying the effect of soybean inoculation on the yield and forage quality of soybeans, made the interesting observation that on common soil, inoculation greatly increased the yield, whereas on rich soil, inoculation increased the percent of nitrogen only.

Kornfield, in Germany stated that seed inoculation resulted in (1) an increase in the weight of individual plants, (2) an increase in the grain yield, (3) relative increase in total protein content, (4) an increase in straw weight per plant in all varieties and (5) an extension of the root system. He concluded that while it is possible to grow soybeans without inoculation, seed inoculation is recommended in order to obtain maximum productivity especially in the early ripening varieties. The earlier a variety ripened the greater was the increase in yield produced by the seed inoculation.

Gerretsen, in the Netherlands, reported on experiments at Groningen in which soybean inoculation produced increases in yield in every case. The increase varied from 8 percent up to 157 percent, with an average of 55 percent. The lecithin content of the oil was increased in five cases out of seven and amounted to 10 percent in one case. In France, Demolon and Dunzen found that inoculation of soybeans gave more vigorous plants and increased the seed yield. Differences were especially marked in soils poor in nitrogen. Inoculation improved the composition of both the plant and the seed. The best yields were 22-30 bushels per acre of seed containing 15 to 17 percent oil and 40 to 42 percent protein.

Two Russian workers, Pankova and Tovarnitski, at the Gorsky Zonal Station obtained maximum inoculation by inoculating seeds with a culture of soybean bacteria and by watering the experimental plots with an emulsion of rubbed up nodules. They counted from 15 to 200 nodules per plant, and found that inoculation increased the yield of protein up to 6.3 percent and total yields of seed increased up to 127 to 210 percent.

L. W. ERDMAN



SOYBEAN DIGEST

In summarizing these well scattered foreign reports it is apparent that regardless of where soybeans are grown distinct benefits from inoculation are reflected in increased plant vigor, seed yields, protein content and more soybean oil per acre. Numerous workers in the United States have reported similar results. We need mention only a few. Illinois Bulletin 310 states, "The value of inoculation is not limited, however, to its influence upon subsequent crop yields, but an immediate benefit is obtained in the form of increased yield of beans, and furthermore the bean crop itself contains a higher percentage of protein than the uninoculated crop." A gain for inoculation amounting to .75 ton in hay and 11.9 bushels of seed was noted. Also there were 23.8 pounds of protein per ton of hay and 84 pounds of protein per ton of seed increases due to inoculation.

Most of you are familiar with K. E. Beeson's recommendation of inoculation for soybeans in Indiana. "To insure enough nitrogen to nourish the plant and enable it to serve as a soil builder, inoculation and re-inoculation of seed for the same field are important. Inoculation should be repeated at least 2 years on the same land or until nodulation is well established as indicated by heavy green growth of the plant and numerous nodules well distributed over the roots."

Iowa Results

Norman and Browning in the April, 1943 Farm Science Reporter gave the results obtained from soybean inoculation in southwestern Iowa where this crop had not previously grown many soybeans. They found:

1—Inoculation stepped up the yield from about 15 bushels per acre to about 19½ bushels—an increase of 31 percent. At \$1.50 per bushel this gain brought \$6.90 to the grower.

2—Inoculation increased the protein content of the soybeans so that with the increased yield of beans, 47 percent more protein per acre was obtained.

3—Inoculation slightly decreased the percentage of oil in the beans, but because of the increased yield 25 percent more oil to the acre was obtained.

4—Inoculation left more nitrogen in the bean straw to be plowed under and enrich the soil after the beans were combined.

5—It took about \$14 worth of commer-

cial nitrogen fertilizer to get as good yield from beans that were not inoculated as from those growing along-side that had been inoculated at a cost of less than 20 cents.

The protein which makes up from 30 to 50 percent of the soybean is of good biological quality and contains the amino acids that are considered necessary for growth in considerable quantities. Since inoculation of soybeans increases the quantity of protein in both hay and seeds, this practice should be encouraged and recommended without reservations. Soybean growers in the southwestern part of Minnesota and parts of Wisconsin may expect

similar results, possibly better than were obtained down in Iowa.

Do Soybean Growers Inoculate Soybeans? By and large the majority of soybean growers do appreciate the value of inoculating soybean seeds. To prove that farmers actually practice the art of seed inoculation a few figures may be used to advantage. Data published by the United States Department of Agriculture show that the peak for soybean acreage—total for all purposes—was about 15.5 million acres in 1943. The peak for soybean acreage for harvested beans reached about 11 million acres in 1947, and the total acreage planted in 1947 was slightly under 14 million acres.

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We made a survey of the inoculant industry in December, 1947. Seven commercial producers of legume inoculants in the Midwest Cornbelt states had an estimated total production for 1946-1947 amounting to 17.5 million bushel units of cultures for all kinds of legumes. Deducting for "returns," or those cultures which were not sold, the approximate amounts of soybean cultures used for that year was estimated at 9,800,000 bushel units. Roughly translated on the acre basis we can conservatively assume that soybean growers purchased sufficient soybean inoculants to inoculate 10 million acres of soybeans. This would mean that in 1947, about 70 percent of the soybeans planted were inoculated with commercial cultures. This is convincing evidence that soybean growers appreciate and practice inoculation more than some of their neighbors who grow other legume crops.

Can we safely assume that this practice of inoculating soybeans has been a contributing factor in the phenomenal rise of soybean production? I believe that all the agricultural extension workers, experiment station and college men, your Association officers past and present, and others who have been interested in promoting soybeans would unanimously agree that the answer to this question is "yes."

Research in USDA on Strains of *Rhizobium japonicum*. During the past several years the division of soil management and irrigation has been interested in the development of more efficient strains of *Rhizobium japonicum* for soybeans grown in the North Carolina and Delta Mississippi areas. One of the main problems here is to increase the yield per acre. In both areas it is almost impossible to find a soil that does not have an abundance of natural soybean bacteria. These organisms have established themselves in these soils after the continued growing of soybeans in rotations for many years. Our problem has been to isolate and find strains of soybean bacteria that will prove more effective in fixing nitrogen from the air than those bacteria naturally present. Such "new" strains are first tested in the greenhouse on several different varieties adapted to these areas. Those that prove superior in the greenhouse tests are then tested in the field. This work is now in progress. Soybeans have moved out into Yuma, Ariz., and are being grown experimentally on the USDA field station. Here we have an opportunity to study the effects of high temperatures and moisture relationships of these bacteria. More research along these lines is sorely needed.

What About Inoculation at Each Seeding? Data to answer this question specifically are on the meager side. In soils with a high state of fertility it is not always possible to see differences in plant growth due to inoculation. An increase of 4 or 5 bushels of seed per acre, likewise, cannot be detected with the eye. But such an increase is more than sufficient to pay for the cost and trouble of inoculating the seed. Even though there is no increase in weight of hay or seed, the protein of the crop may be increased

as was demonstrated at the Michigan station, as well as the work reported from Argentina.

In reality it takes very little in the way of benefits to pay for the inoculation. The many unknown factors should be taken into consideration. Even in soils which have grown soybeans for several years or more, there is a possibility that conditions may have been unfavorable for the maintenance of highly efficient soybean bacteria. Unfavorable soil conditions, especially too much acidity, have a tendency to make the bacteria more or less unhappy and cause them to be ineffective in their nitrogen-fixing activity. Nor can farmers be sure that the bacteria in the nodules on a previous soybean crop were of maximum benefit to that crop. The mere presence of nodules on the roots does not tell the story of nitrogen fixation.

However, recent studies on nodules by several European workers have pointed out that the red pigment in nodules is actually haemoglobin—it was proved to have the same chemical composition as our blood haemoglobin. In some way this compound enters the process of nitrogen fixation. So if you cut a soybean nodule in half with a knife and the contents are red, it in-

dicates high nitrogen fixation; if the contents are brown, it indicates mediocre or poor fixation, and, if green, no fixation is taking place. This method affords a positive qualitative test for nitrogen fixation on the growing crop. But unfortunately there is no ready method that we can use to test a field prior to planting soybeans to determine if sufficient bacteria of a high state of efficiency are present to effectively inoculate the new crop.

In our new Farmers Bulletin No. 2003 on Legume Inoculation it is stated "The one fundamental purpose of legume inoculation is to add a fresh culture of effective strains of legume bacteria to the seed (preferably), so that where the young plant begins to grow, the bacteria will be right there to enter the tiny root hairs and begin their beneficial work in the early stages of the plants growth."

"Now that farmers can purchase legume inoculants prepared with the most effective strains, the simplest, easiest and most economical way to insure successful growth is to inoculate legume seeds before each planting." Good sound advice to all farmers is, *inoculate in all cases of doubt and always on soils that have not grown soybeans.*

WEED CONTROL in Soybeans

By R. G. ROBINSON

Assistant Professor, Division of Agronomy
and Plant Genetics, University of Minnesota.

LATE PLANTED soybeans on early prepared land can be successfully used as a competitive crop for controlling many annual and perennial weeds. I soon discovered that as much research work in this state had been done on "weed control with soybeans" as on "weed control in soybeans." However, a visit to most soybeans fields at this time of year will convince any one that "weed control in soybeans" is a good subject.

The secret of weed control in soybeans is correct management of the weed seed population of the soil. The foxtails, barnyard grass, lambsquarters, pigweed, smartweed, cocklebur, and velvet weed that are producing seed in soybean fields now are not the intruder, in most cases for their ancestors germinated, grew, reproduced, and died in that same field. The intruder is the soybean which has had to establish itself in the midst of this weed competition. The Minnesota Experiment Station has determined the viable weed seed population of the soil at several locations, and these data frequently show two or three thousand viable weed seeds per square foot of soil to a depth of 7 inches. From three to 24 soybean seeds per square

foot, depending on the rate and method of planting, may be drilled into a soil containing 1,000 pigeon grass, 400 lambsquarters, 300 wild buckwheat, 200 wild mustard, 200 pigweed, and many others per square foot.

Obviously any practice, cultural or chemical, which decreases weed seed numbers in the soil before soybeans are planted will be beneficial. Reduction of the weed seed population of the soil is a slow process. No chemical has yet been developed that can economically be applied to the soil and kill all seeds to plow depth. Neither will a year or two of fallow completely rid the soil of weed seeds.

Part of the difficulty in reducing the weed seed population of the soil is that many of the weed seeds are dormant. Some of these dormant seeds would germinate if they were given proper conditions of moisture, temperature, and aeration. These seeds can usually be made to sprout by properly timed tillage. Some seeds, however, are naturally dormant and do not germinate even under favorable conditions of moisture, temperature, and aeration. This latter group of seeds must

• At present there are no chemicals that can be recommended for weed control in soybeans, according to the author.

undergo freezing, alternating temperatures, weathering, or other phenomena before they will germinate.

Therefore, weed control throughout the entire crop rotation greatly reduces the weed problem in soybeans. Special effort should be made to eliminate the non-dormant, viable weed seeds in the surface soil before the soybeans are planted.

The production of weed seed in small grain stubble after harvest is probably the weakest spot in weed control on most farms in this area. The remedy is simple. Plow immediately after small grain harvest! This practice is especially valuable in preventing seed production of foxtail and barnyard grass which are the most common weeds in soybeans. The weed seeds brought to the surface by this plowing have spent at least one winter in the soil and so are quite likely to germinate when brought up to warmth and air. The weed seeds plowed under were either produced in the small grain that same year or else were naturally dormant and failed to germinate that spring. Many of these weed seeds would not germinate even under favorable August and September conditions, so it is desirable to turn down that surface of the furrow slice by early plowing. Weeds that grow on this early plowing will provide cover for the soil and can be destroyed by a light cultivation if they are likely to produce seed before freezing. Early plowing also makes it easy to locate and control patches of perennial weeds by tillage or with herbicides in September.

If red clover or alfalfa was sown with the small grain, there is no simple or easy remedy like there was in the preceding case. Willard and Lewis at the Ohio Experiment Station reported that mowing and removing grain stubble right after harvest was beneficial to stands of alfalfa and red clover. Mowing of the stubble will also destroy many weeds, especially non-grass weeds, but considerable pigeon grass will produce seed below cutter bar height. However, any reduction in amount of weed seed produced in the stubble and legume mixture will be of direct benefit to the soybean crop. Corn usually follows meadow in the rotation and soybeans follow corn. Therefore, when the meadow is plowed for corn, the stubble and legume surface will be turned under, but this surface will again be turned up when the corn land is plowed for soybeans.

I have mentioned the production of weed seeds in small grain stubble as the

number one weak spot in annual weed control, because it can be easily and cheaply corrected. Weak spot number two is the production of weed seeds in corn fields after the corn is "laid by." This cannot be easily corrected, and is serious for soybeans because the common weed species in corn are the same as those that infest soybeans. Flame cultivation of corn may offer some possibility of keeping rows or hills free of weeds until "lay by" time which would be a great help. Also the use of herbicides in corn offers promise.

Fall plowing after corn is desirable as the weed seeds brought to the surface will be exposed to more variable temperatures and in the spring will be in position to germinate as soon as temperatures become favorable.

Early working of ground in the spring raises the soil temperature, and this encourages germination of weed seeds. A long interval between the first working of the ground in the spring and soybean planting will make it possible to destroy more than one crop of weeds by tillage during the interval.

Many weeds can germinate and grow vigorously at lower temperatures than soybeans. This makes it necessary to delay soybean planting until the ground is warm, which reminds me of a story I read in a farm magazine about when to plant corn. "When you can remove your pants and sit on the ground for 10 minutes without discomfort, then it is time to plant corn." The same is true for soybeans, only more so.

The seed bed should be given a final working and the beans planted from 1 to 2 inches deep. Cultipacking or dragging after planting encourages quick germination so that the beans get ahead of the weeds.

Thick planting is desirable because thick planted beans grow taller and get above the weeds more rapidly than thin planted beans.

The spike tooth harrow is commonly used as both a pre-emergence and post-emergence tool on soybeans in this state. This implement and also the weeder and rotary hoe are useful in beans only when the weeds are just emerging. When a weed develops much root, it is no longer dislodged by the implement. Properly timed use of these implements has given wonderful results and has frequently reduced the number of cultivations given rowed soybeans. There is probably not much danger of loss in yield from stand reduction by these implements. Kalton, Weber, and Eldridge at Iowa in a recent study of soybean defoliation reported little decrease in yield from stand reductions up to 50 percent when soybeans were 4 to 5 inches tall. That is usually about as high as it pays to harrow soybeans, because they are an excellent smother crop and new weed seedlings do not survive under them after the bean leaves cover the row.

The development of 2,4-D aroused interest in the use of herbicides on soybeans. Post-emergence applications of

2,4-D to soybeans have been almost universally injurious to the beans if weeds were controlled. Shaw and Willard at Ohio found that dosages as low as 1/3 ounce per acre reduced yield. Mustard is the only common weed that can be controlled by such a small dosage, and the control of mustard would be very incomplete. Derscheid and Kratochvil at South Dakota found varietal differences in the response of soybeans to 2,4-D.

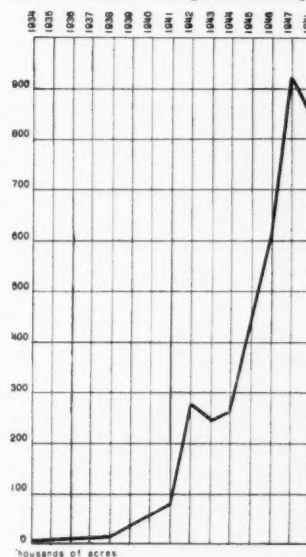
Ammonium and sodium trichloroacetate which are good grass killers have been applied post-emergence to soybeans. Even at dosages well below those necessary to kill grasses, soybeans were severely injured according to Derscheid and Kratochvil at South Dakota, Helgeson and Swanson at North Dakota, and Slife and Fuelleman at Illinois.

Pre-emergence applications of 2,4-D to a damp soil have sometimes given wonderful results, even controlling grass weeds, but 2,4-D applied to a dry soil has usually been ineffective on both weeds and crop. Dr. Willard has written me that rain between time of spraying and soybean emergence has been so injurious that they cannot recommend 2,4-D on soybeans. Arakeri and Dunham at Minnesota have had similar results with 2,4-D pre-emergence on corn, and they also found soil texture, soil organic matter, and soil pH were important factors affecting 2,4-D toxicity in the soil.

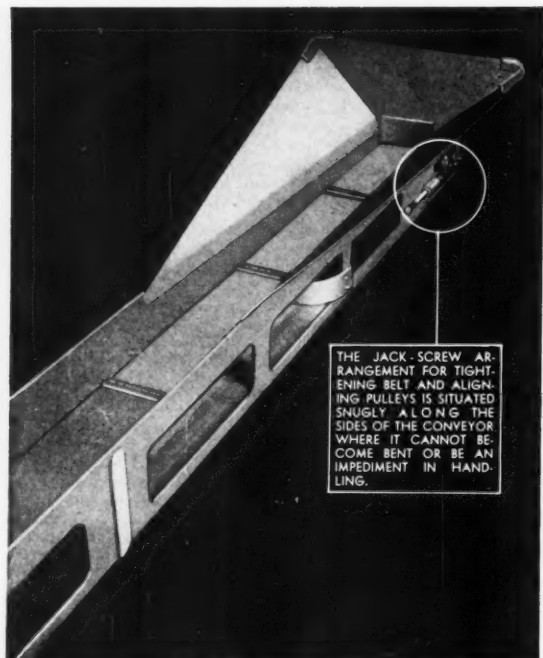
Trichloroacetate was thought to be a "natural" for pre-emergence treatment of soybeans since it is so toxic to grasses, but work by Arakeri and Dunham last year showed that dosages as low as 2 pounds per acre severely injured soybeans. Among many crops tested, soybeans were

(Continued on page 75)

Rise in Minnesota Soybean Acreage



ANNOUNCING OUR MODEL CAST SEED AND GRA



THE JACK-SCREW ARRANGEMENT FOR TIGHTENING BELT AND ALIGNING PULLEYS IS SITUATED SNUGLY ALONG THE SIDES OF THE CONVEYOR WHERE IT CANNOT BECOME BENT OR BE AN IMPEDIMENT IN HANDLING.

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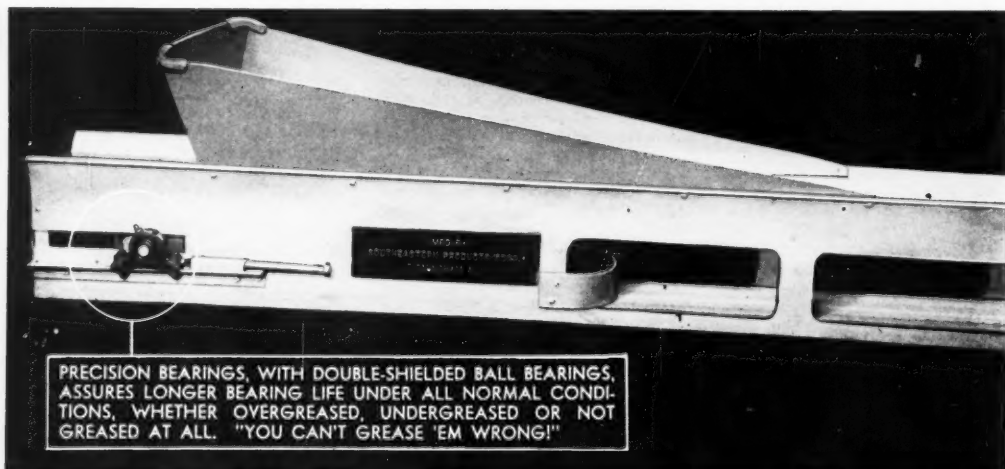
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The reception given the SEPCO display at the Minneapolis Convention really made us happy! We appreciate the interest shown by soybean people in this conveyor and are delighted by the orders received.



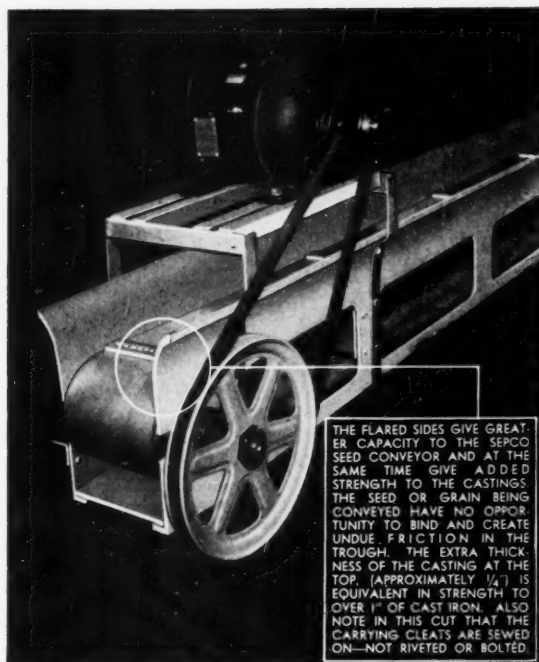
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SPECIFICATIONS ON STANDARD MODEL

Sides are made of 3/16" Cast Aluminum Alloy up to the flare and are increased to 1/4" at top of flare. Trough is 6" wide at bottom and flared to 9" at top—and is 4 3/4" deep. The over-all height of sides is 10". Bottoms of trough are made of permanent outdoor specially treated Marine Plywood of 1/4" thickness. Pulleys are made of centrifugally cast aluminum alloy. All bearings on Conveyor, as well as motor are ball bearing. Hopper is made of 16 gauge steel sheet 24" wide at back, 9 3/4" high and 4' long. Conveyor belt is made of oil resisting Duck and Neoprene that is specially built for our Conveyors. The Conveying Cleats are made of Duck and Neoprene and are sewed on. The over-all length of the Conveyor is 18 feet. Standard model is equipped with 3/4 H.P. Electric Motor with 25 feet of extension cord. The total weight less motor is 170 pounds, with motor 215 pounds.

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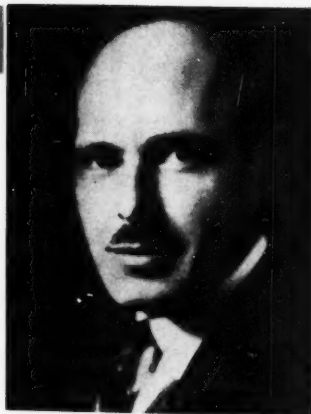
SEPTEMBER, 1949

67

Minneapolis

THE WORLD'S CASH GRAIN MARKET

By A. M. HARTWELL



A. M. HARTWELL

SOYBEANS might be considered as the glamour girl of all grains due to its very diversified uses. A few years ago I met a South American who told me that when the history of the last war was written it would be shown that the war was fought on soybeans. I have never had his statement confirmed by the experts, but he advised me that Germany had been buying soybeans from every available source for several years before the war, knowing that by storing up soybeans they would have the most concentrated nourishment to sustain their people. I hope that the soybeans which you are raising will not be used by an unfriendly power as a safeguard in a war of aggression.

The records in the Minneapolis market showed that in the year 1948 soybean receipts amounted to 7 million bushels as against 5,500,000 bushels in the preceding year, and less than 500,000 in the years 1941 and 1940. I observe from your program that the Minnesota soybean acreage has increased from a mere 2,000 acres in 1932 to almost a million in 1947. Last year's Minnesota production was, I believe, 15,500,000 as against only 1,200,000 in 1941. While the increase in the United States crop was twofold from 1941, when it was 107 million bushels, to last year's large crop of 220 million, the production in Minnesota has been more spectacular with 14 times as much produced in 1948 as in 1941.

I have been asked to tell you something of the Minneapolis Grain Exchange, which is the largest cash grain market in the world. As California inhabitants always like to talk about their state, I always welcome an opportunity to talk about the Minneapolis Grain Exchange which, I feel, plays a very important role in the economic life of the nation, but is especially important to the producers of this particular area. It provides a market place where they may sell their grains, with the assurance that there are represented more buyers not only of local industries but agents who buy for all sections of the country as well as representatives of exporters, thus assuring the sel-

ler the best available price through the competition of many and varied buyers.

The title of the largest cash grain market in the world is one of which our members are proud but not boastful because we realize that the supremacy of our cash market is due to the efforts of the producers in the country tributary to us and that, although it is obvious that we would not have grown had we not served a need, nevertheless, it is the abundance and variety of grains produced in this fertile section which give us that distinction. The trading in futures on the Chicago Board of Trade is much greater than in Minneapolis. Chicago may handle more corn, Kansas City more wheat, but the total of all grains received in Minneapolis is larger than any other market in the world, composed of spring wheat and durum, barley, oats, flaxseed, rye, corn, and recently soybeans, and totaling over 300 million bushels annually for the last several years.

The efficiency of the market is greatly aided by the large terminal storage capacity of Minneapolis. The last published figures show the elevator capacity in Minneapolis to be almost 95 million bushels and in Duluth 45 million bushels—storage which is available for handling and storing the crops of this section.

Beginnings

The market grew from small beginnings and its location in Minneapolis is primarily due to Old Man River since the Mississippi provided the power for the operation of the mills which were built along the river banks. As the railroads became an important part of the economy of the nation and transported grain to Minneapolis, it became apparent that there was a need for a common meeting place where mill and other buyers could have the opportunity of examining samples of the shipments, and where the northwest grain farmers could have a display and sales room for the grain which they grew. And so in 1881 the Grain Exchange, then known as the Minneapolis Chamber of Commerce, was established.

Although the Exchange will celebrate its 68th birthday in October of this year it has no intention of retiring but rather of increasing its services to the public.

As I am sure you all know, the Grain Exchange is really just a market place, differing in its primary functions very little from the open markets, where producers may bring their produce from the farms to sell where there is a concentration of buyers in a city. The Exchange itself does not buy or sell any grain, nor does it exert any influence on prices. It is an association of individuals and companies, who are engaged in the sale, purchase, and processing of grains. Its membership numbers 522. Its officers and directors serve without compensation and are elected by the membership, so that each cross section of the principal divisions of the trade may be represented. The membership is available to any individual whose credit and reputation for honorable dealing are such that they satisfy the board of directors that he is a suitable person to entrust with the duties and responsibilities of membership.

The rules of the Exchange have been adopted from time to time by the members themselves to govern their own conduct. It is most important in order to facilitate rapid and easy trade that definite rules be established to govern each class of trade. If there is, therefore, any misunderstanding in regard to a trade it can be easily settled by referring to the rules of the Exchange. Knowing that the rules are laid down, it is possible for a buyer and seller to execute trades covering large amounts of grain in an incredibly short time. This works to the advantage of the shippers by making it possible to execute trades quickly and thus keep at a very nominal rate the commission charge for selling, which is ordinarily 1 percent of the value of the grain.

You can understand that if in every trade buyer and seller had to agree upon many details of payment, time of delivery, etc., that it would be very time consuming. If you will watch the trading on the floor you will realize that trades involving large amounts are made in a mat-

• The author is president of the Minneapolis Grain Exchange. He has been associated with Washburn Crosby Co. or General Mills, Inc. since 1911.

ter of seconds. This is one of the reasons that grains are marketed at the lowest cost to the producer of any agricultural product. The grain exchanges are very proud of that fact. To be sure a buyer and seller may agree on any special terms which are mutually satisfactory, provided they do not violate the established regulations, but there are detailed rules laid down to protect both buyer and seller where no peculiar and exceptional arrangements have been made.

The strictest rules of commercial conduct are applicable to all transactions between members and between members and non-members and the highest code of business ethics is demanded by the rules. If there is any infringement of the rules, the penalties are severe including expulsion from membership. I am happy to say that it is very seldom that discipline has to be enforced.

We in the Exchange are interested, as are you, in the production of good crops to satisfy the demands of the nation's economy. Our members are members of crop improvement associations working with you for improvement in seed. Although soybeans have not been an important factor in this market until recent years, members of the Exchange have made it a point to acquaint themselves



Scene in the Minneapolis Grain Exchange near closing time. Convention attendees were invited to visit the exchange.

thoroughly with the demand and outlets for soybeans, and I feel sure that the commission firms in our market can serve you advantageously in selling soybeans.

Minneapolis has been the center of the flax industry for many years and some of our crushers are now using soybeans. However, to date processing of soybeans in Minnesota has not equalled the production. For that reason, it is important that those who may be handling your crops consult with the commission firms of the Exchange before shipping cars to the Minneapolis market. Grains produced to the north and west of us can be shipped to Minneapolis with the realization that in the Minneapolis market they will receive the best available price. However, since the large proportion of soybeans in

this locality are grown in the southern part of the state, it is not recommended that cars be shipped into the Minneapolis market on consignment without the advice of a commission firm. The commission firms in Minneapolis are posted on bids in various sections of the country and I feel sure that they can sell your beans to the greatest advantage, but the best buyer may not be located in Minneapolis and if soybeans are shipped to Minneapolis and later reshipped to the south, they are going against the regular flow of grain which, in this section of the country, is from north and west to south and east and may be penalized by out of line rates. We are all anxious that you should receive the highest available price for your beans and wish you a most successful year.

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GOVERNMENT

THE 1949 OUTLOOK for Soybeans

By GEORGE L. PRICHARD

Director, Fats and Oils Branch, U. S. Dept.
of Agriculture

IT IS A PRIVILEGE and a pleasure to meet with your Association again this year to discuss the outlook for soybeans.

Although your primary interest is in edible fats and oils, and particularly soybeans, I want to first mention briefly the situation for inedibles because they do have a bearing on the edibles. Drying oils are in abundant supply throughout the world. The reduction in the U. S. support price for 1949-crop flaxseed has narrowed the differential between our domestic prices for linseed oil and soybean oil.

Soap fats are in good supply in relation to effective demand. Tallow and grease supplies are adequate, with a large surplus available for export from the United States. World production of copra and palm oils should continue to increase. These tropical oils are being substituted in Europe for liquid edible oils to a considerable extent because, with the exception of the Philippines, they are available for non-dollar currencies.

U. S. production of fats and oils during the crop year beginning October 1 is expected to remain at or near record levels. Production of vegetable oils will decline as a result of the indicated smaller production of soybeans and peanuts but this should be more than offset by increased production of lard. We will, therefore, again have large quantities of oilseeds and fats and oils available for export from 1949 crop production and for

the second year in succession should have a substantial balance of net exports. This is quite a contrast to prewar when the U. S. was a net importer.

Our favorable supply position in the edible field is due, as you well know, largely to the expanded soybean production. This same expansion met our needs during wartime when import supplies were unavailable. I want to compliment you again on this wonderful record of production.

The effective export demand for our oilseeds and fats and oils is dependent on several factors which are unknown at this time. One of the most important will be the amount of ECA funds which are made available for this purpose. Others include the availability of fats from other surplus producing areas of the world, the price level in relation to other commodities needed by importing countries, and government policies, particularly monetary and trade policies.

In my opinion, U. S. producers of soybeans are for several reasons in a rather unique and possibly a favored position. In 1938, the last prewar year for which complete information is available, Europe imported about 50 million bushels of soybeans, largely from Manchuria. Imports during 1930-34 averaged even more. In addition, the same countries imported large quantities of soybean oil and meal. Your president, Mr. Walley, has reported to you fully on the preference of European importers for soybeans and other oil-

seeds. These countries are not now obtaining any significant quantities of soybeans or soybean products from Asia and, therefore, their logical source of supply is the U. S.

In addition, exports of peanuts and other fats and oils from India are far below prewar and are not likely to increase materially. U. S. exports of shelled peanuts to ECA countries will be reduced as the U. S. crop is brought more nearly in line with edible demands through marketing quotas which are in effect for the 1949 and 1950 crops. Our exports of shelled peanuts from the 1948 crop for crushing were about 250,000 short tons, or in terms of oil approximately 215 million pounds. Exports from the smaller 1949 crop will be considerably less.

American farmers should, therefore, find ready markets for 1949-crop soybeans. The export possibilities are good so long as soybeans are not available in quantity from other areas. As an indication we can point to the record export for the past several months since export controls were discontinued. During January-June 1949 our total exports in terms of oil content were nearly 1,350 million pounds. Soybean exports were over 14 million bushels and over 200 million pounds of soybean oil was exported.

There is one other factor in the domestic picture which is particularly important to soybean producers. That is the prospective reduction in cotton acreage in 1950 and the resulting decrease in the production of cottonseed and its products. Also, on the domestic side, is the expansion in solvent extraction capacity of soybean crushing mills. This capacity is now nearly equal to the annual domestic crush. Important to the farmer is the fact that solvent extraction increases the oil outturn, thereby increasing the value of the products from a bushel of soybeans.

It now appears we shall have large sup-



PRICHARD



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plies of fats and oils for export and the need exists abroad for these supplies. It is up to both you and us in government to see that maximum quantities are exported. We shall again do all we can to see that exports are made as early as possible in the crop year so that the export demand will be in the market when our farmers are marketing this crop.

Before commenting on government programs for soybeans, I want to mention one that is no longer in effect. Export allocations for oilseeds and for fats and oils were discontinued by the Secretary of Commerce last February 10 and formal export licensing of all domestic items in this group was ended in mid-August.

The only programs now applying directly to soybeans are price support, storage construction, import control, and research conducted under the Research and Marketing Act of 1946.

The support level for 1949-crop green and yellow soybeans grading No. 2 and containing not more than 14 percent moisture will be \$2.11 per bushel. Premiums and discounts will be in effect as for the past several years. Only soybeans grading No. 4 or better and containing not more than 14 percent moisture are eligible for price support. I call attention to the changes made in the U. S. Standards for soybeans, effective September 1, 1949. The major change is the combination of dockage and foreign material into one factor "foreign material." The maximum limit for foreign material is increased one percent for each grade.

Loans and purchase agreements will be available through January 31, 1950, or one month longer than for the 1948 crop. The loan maturity date has also been extended one month to May 31.

Last year farmers placed only about 10½ million bushels under the protection of this program. Of the quantity acquired by CCC, 4 million bushels were sold promptly for export and the remainder sold domestically at no loss. In view of the market condition which prevailed after the closing date for 1948-crop loans and purchase agreements, I believe every farmer should give serious consideration to using the protection afforded by this program for 1949.

Price Supports

The soybean price support program is carried out through local county committees working with state PMA committees

and PMA commodity offices. Detailed information is available through local committees or county offices. Soybeans placed under the loan may be stored in either farm storage or warehouse storage. Farm storage must be approved by the county committee and must be a permanent structure substantial enough to afford adequate protection and permit effective fumigation. Approved warehouses are those which have executed a uniform grain storage agreement with CCC for 1949 crops.

Service fees are 1 cent per bushel with a minimum of \$3 for beans placed under farm storage loan. The fee for beans under warehouse storage loan or covered by purchase agreement is ½ cent per bushel with a minimum of \$1.50.

Storage allowances paid to producers for soybeans placed under loan and not

redeemed, and for soybeans delivered to Commodity Credit Corporation under a purchase agreement, will be 7 cents per bushel. In addition to the maximum storage payment of 7 cents, a track loading payment of 2 cents per bushel will be made to the producer on soybeans delivered on track at a country point under instructions from CCC.

To increase farm storage facilities, Commodity Credit Corporation will make loans available to farmers for constructing or acquiring farm storage facilities. These loans are available to any tenant, landlord, owner-operator or partnership of producers having an interest in the production and storage of soybeans. Loans will be made for the purchase or construction of new farm-storage facilities which will meet requirements for eligible storage under the CCC loan program,

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MOUNTING COMMODITY CARRY-OVERS, the delay in revising price-support programs, and increasing uncertainty over the manner in which large Government holdings will be liquidated, continue to complicate the problem of inventory controls—and the operations of anyone in commodities.

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provided there is a need for the facility and it is of suitable capacity. The structure must meet the needs of the individual farmer for storage of his own production and must be located on or near his farm.

Storage facility loans will be for a maximum term of 5 crop years, payable in equal annual principal payments with interest at 4 percent of the unpaid balance. The maximum amount of the loan will be 45 cents per bushel of the rated capacity or 85 percent of the cost, whichever is the smaller. Loans will be available from approved lending agencies or directly from Commodity Credit Corporation. Under the

agreement with the lending agencies CCC guarantees payment of the principal and interest on the full amount of the loan and the lending agency retains all interest collected. The lending agency will service loans so as to fully protect the interests of CCC and will service default loans until such loans can be taken over by CCC. Direct loans will be made by CCC only if the applicant does not wish to obtain credit from other sources.

Any payments to the producer under the price support program for the storage of soybeans in farm structures on which CCC has made or guaranteed a storage facility loan to the producer shall be ap-

plied to the storage construction loan until it is fully repaid.

The terms of the individual storage facility loan may be extended for an additional year with the prior approval of the county committee. It is contemplated this provision will be used only in emergency cases, such as the loss of crops, due to conditions beyond the control of the borrower.

The legislation authorizing the control of imports of fats and oils was extended to June 30, 1950. Under this authority, the imports of fats and oils into the U. S. are being restricted.

Several projects pertaining specifically to soybeans are now being carried out under the Research and Marketing Act of 1946. The fats and oils branch is now working on a project related to the farm storage of soybeans. The purpose of the study is to secure and make available reliable information upon which farmers can base their choice of structures and methods of storing soybeans on the farm. In addition to the farm storage phase, this project also applies to the country elevator and terminal market facilities.

In addition to the storage project, the fats and oils branch is conducting research for the purpose of analyzing statistically the factors affecting the quality, quantity, and value of outturns of soybean products and the relations to present methods and standards of grading soybeans, including possible alternative standards.

Oil Test

The Beltsville laboratory is conducting a project for the purpose of finding a quick and simple way of determining the oil content of soybeans. Three other projects are being carried out by the Agricultural Research Administration which are of particular interest to the soybean industry. These include a study of the flavor stability of soybean oil, the development of new and expanded uses for soybean proteins, and a study of the composition and modification of soybean lecithin.

There are a few other items of interest to soybean producers. Hearings being conducted by the Food and Drug Administration relative to the use of chemical emulsifiers in the baking industry are of considerable importance to the soybean industry, since the expanded use of chemical emulsifiers at the expense of animal or vegetable shortenings might represent a very substantial market reduction for the fats and oils industry. A bill has recently been introduced in the Senate which would specify a minimum usage of shortening in bakery products. A number of bills have been introduced which would place import fees and export bounties on fats and oils and oilseeds to insure exports of fats and oils equivalent to United States imports. The final outcome of these various proposals and hearings remains to be seen.

It is always a pleasure to meet with you and if we in the fats and oils branch can help you in any way, please let us know.

From both **COST** and **PERFORMANCE** standpoints

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	ARID-AIRE DRYER	No. 2 DRYER	No. 3 DRYER	No. 4 DRYER	No. 8 DRYER
QUALITY OF DRIED PRODUCT	Excellent	Excellent	Excellent	Excellent	Excellent
PORTABILITY	Yes	No	No	No	No
EASY, LOW-COST INSTALLATION	Excellent	Fair	Fair	Poor	Poor
*FLEXIBILITY	Yes	No	No	No	No
INSULATION	Yes	No	No	No	No
CUSTOM DRYING	Excellent	Medium	Poor	Poor	Poor
AUTOMATIC CLEAN-OUT	Yes	No	No	No	No
AVAILABILITY OF SERVICE AND PARTS	Quick	Poor	Medium	Medium	Medium
LIFE OF DRYER	Long	Short	?	Long	Long

*Easy conversion from one grain to another, drying of small lots, etc.



Now it's the new **"MODEL C"**
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Positive, chain driven, roller supported wire-mesh drying apron. Increased blower capacity
... Improved controls... Automatic clean-out
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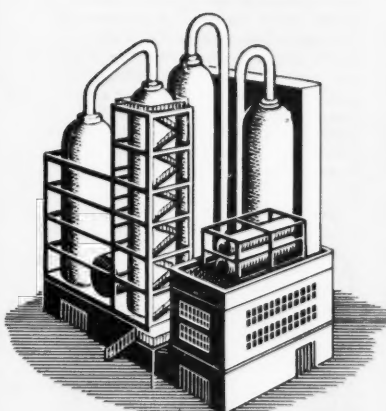
- Delivered completely assembled... ready to run.
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VIA BLAW-KNOX METHOD OF SOLVENT EXTRACTION



THE processing of such oil-bearing seeds as soya, cotton, peanut and tung has been brought to a high pitch of efficiency by a group of Blaw-Knox engineers *specializing* in this important field . . . If you are in any way concerned with the operational or financial phases of oil extraction we will be glad to give you the facts and figures which resulted in Blaw-Knox being selected to build *more than 80%* of the new soybean solvent extraction plants contracted for in 1948.



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SOYBEAN STANDARDS

By W. L. INGLES

Chairman Board of Grain Supervisors, Production and Marketing Administration, U. S. Department of Agriculture.

FOLLOWING urgent requests from producers, country elevator interests, and others interested in the production and marketing of soybeans, the U. S. Department of Agriculture in 1947, and again in 1948, held public hearings on proposed changes in the official standards of the United States for soybeans. Persons attending the hearings spoke for and against changes in the soybean standards. Several written statements for and against changes also were received by the Department.

A majority of the opinions received were in favor of changes, but the revisions requested were varied as to wording and percentages. After consideration of all available information, certain changes in the standards were announced in April of this year, and these became effective September 1.

We appreciate the opportunity to consider these changes with the membership of this Association.

The principal change made in the standards was the abolition of the dockage system and the combination of previously considered dockage material with foreign material, together with a necessary adjustment of percentage limitations in the various grades. Other changes were made in the adjustment of the amounts of splits and other classes permitted in the several numerical grades and in the classification of certain green-colored soybeans.

A high percentage of the soybean crop is produced in areas which are not accustomed to handling grain on a dockage grading basis. Country grain shippers in such territories objected to the dockage system and seemed to be overwhelmingly favorable to a return to the system in effect before 1941, which combined sieved and handpicked foreign material as one degrading factor. Soybean processors previously were accustomed to assessing discounts based on the total percentage of foreign material and objected to the dockage system, since dockage was stated in

whole percentages only and fractions were disregarded.

For these reasons a return to the previous system seemed advisable. This required an adjustment of the amounts of foreign material permitted in the several grades, since two previous factors were being combined as one. The percentage limitations as adopted seem to be a desirable compromise between the various requests and the production possibilities.

Foreign Material

Henceforth the percentage of foreign material as shown by a licensed grain inspector will be a combination of sieved and handpicked foreign material and will include all material removed by an 8/64 inch round hole sieve, in addition to all material other than soybeans remaining on the sieve.

If soybeans are shipped to terminals in the same condition in which they have been received in the past few years, it is expected that a higher percentage will be degraded on foreign material than previously.

Most of the green-coated varieties of soybeans which normally are yellow in cross section are used for the same purposes as yellow varieties and have oil and meal quantities and qualities comparable to the yellow varieties. It has been decided that those green varieties which are yellow in cross section should be classed and graded as yellow soybeans. Those green-colored varieties which are green in cross section will still be classified as green soybeans. It is expected that this change will place most of the green soybeans produced commercially in the yellow class.

Normally we expect to have an occasional crop year in which early frosts may damage the crop and cause immaturity characterized by green color. Such soybeans of the yellow varieties which remain green are classified as yellow.

Splits

The percentages of splits permitted in grades 2, 3 and 4 have been increased slightly. The increase in the limits for splits was made because it was found that the previous limits for all grades except grade No. 1, were lower than the usages of the trade required, and that discounts applied in actual trading practices did not warrant such tight limits.

No changes have been made in the test weight, moisture, or damaged kernel limitations. No change has been made in the definition of damaged kernels, and the interpretations of these will be the same as in previous crop years.

This covers the changes in the standards in which soybean handlers will normally be interested. You, as well as those of us in the Department of Agriculture, will be watching with interest to observe the way these revised standards work. We in the Department will welcome your continued constructive criticism and suggestions.



We Design and Build to Fit Your Needs.
TILLOTSON CONSTRUCTION COMPANY
Omaha, Nebraska

ROBINSON

(Continued from page 65)

the best "indicator" of the presence of TCA in the soil.

The soybeans in the picture which was taken August 26, 1949 at Rosemount, Minn., show typical TCA toxicity symptoms. Flax heavily infested with quack grass was on this field last year. The field was sprayed with TCA at dosages varying from 12½ to 50 pounds per acre on May 27, 1948, when the flax was 3 inches and the quack grass 10 inches tall. The quack was controlled, but the yield of flax was reduced about 50 percent. Soybeans were planted on the field May 26, 1949, and grew normally until July 1, when the toxicity symptoms appeared. Also, on quack grass land treated with TCA last fall, oats and flax developed normally this spring but corn and soybeans did not. Don't plant soybeans in 1950 on land treated with TCA in 1949!

Regarding PCP or pentachlorophenol, Dr. Willard wrote me that they had some excellent results with pre-emergence applications, but sometimes PCP reduced germination of soybeans so that it cannot be recommended at the present time.

So for the present, there are no chemicals that can be recommended as herbicides for soybeans. However, proper use of cultural practices and herbicides on other crops can aid in reducing the weed seed population of the soil and thereby benefit soybeans.

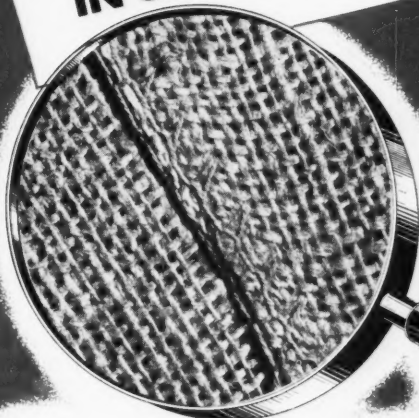
This paper has described the fundamental principles of weed control in the soybean crop and also the present status of herbicides on soybeans.

Residual effect of TCA applied in 1948 on soybeans in August 1949.



SEPTEMBER, 1949

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A TON
IN SACKING COSTS!



Mills throughout the middlewest have found they can cut their sacking costs up to \$1.00 a ton and **STILL HAVE** high quality, new looking bags with their regular imprint! Those mills are using 'NU-SEME' burlap cotton bags, made exclusively by **WESTERN Burlap Bag Co.**

'NU-SEMES' are completely re-conditioned bags, individually selected from the best used bags obtainable. After thorough cleaning and reprocessing, each bag is turned inside out and the rough seam neatly re-sewn and covered by **WESTERN'S** patented 'NU-SEME' machines . . . making a bag that looks like new and with **EVEN STRONGER** seams! When imprinted with your regular colorful imprint, they can hardly be told from new . . . except in cost.

Find out today how 'NU-SEME'S' lower prices can mean greater savings in your production costs. Prices and full information will be gladly sent without obligation.



Western
Burlap Bag Co.

1101 WEST 38th STREET

CHICAGO 9, ILLINOIS

INSECT CONTROL

Department of Agriculture scientists have found a chemical treatment which successfully keeps insects from penetrating cotton bags.

Dr. Richard T. Cotton of the Bureau of Entomology and Plant Quarantine, Manhattan, Kans., and Winston B. Strickland of the Southern Regional Research Laboratory in New Orleans developed the treatment and worked out a practical method of application.

Before announcing their discovery, the scientists confirmed its effectiveness by exposing both treated

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Marietta Storage Bins give you safe, fire-proof storage. Their light-weight aggregate Air-Cell stave construction provides locked-in air insulation that beats SWEAT and keeps moisture OUT . . . lowers insurance rates.

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Solvent Mill of Soybrands Division



Originally a flour mill restored by Henry Ford in 1934, the solvent extraction plant of Soybrands Division, Saline, Mich., stands in a picturesque spot on the Chicago-Detroit highway. Newer extraction building in foreground connects with old building by a two-way Redler conveyor. Beans are trucked in from rail siding 1 mile distant. Daily capacity of the mill is 33 tons and storage capacity is 15,000 bushels. Most beans are grown locally. In the foreground winds the mill pond that furnishes power for the operation. Officers of Valley Chemical Co., the parent company, are John J. Hamel, president; E. F. Hamel, treasurer and plant manager; and J. J. Hamel, Jr., Secretary.

and untreated bags containing insect-free flour for long periods of time in a room containing thousands of hungry flour beetles and moths. In one such test, bags made of treated cloth admitted no insects during 7 months, while an untreated bag let in 563 insects.

The insect-repellent treatment consists of pyrethrins or a mixture of pyrethrins and piperonyl butoxide—two insecticides that are of comparatively low toxicity to warm-blooded animals. Tests to date indicate that food packed in properly treated bags is unlikely to be contaminated with these chemicals, but further investigation is needed.

— s b d —

NEW INSTALLATION

The Refuge Cotton Oil Mill, Greenville, Miss., is installing one of the largest and latest type Kewanee Universal cottonseed and soybean hydraulic truck dumpers, with a platform 50 by 10 feet to accommodate the largest trucks used for transporting the products. The equipment is manufactured by the Kewanee Machinery & Conveyor Co., Kewanee, Ill., and sale was consummated through the Memphis distributor, Industrial Supplies, Inc. C. C. Castillow, district engineer for the mill is in charge of construction.

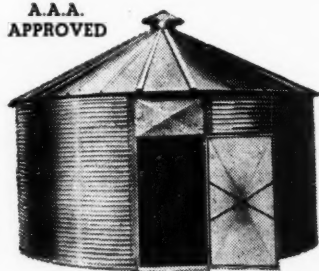
The installation, which will be ready for the fall season, is being made in connection with the in-

creased storage facilities at the mill. A storage tank of 6,500 ton capacity soybeans is being erected.

MIDWEST GRAIN BINS

Galvanized Steel Construction

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APPROVED



The government farm storage program has developed the biggest demand for steel bins for farm storage in history. Every farmer a prospect who has not ample storage facilities available. Midwest Bins are proper storage for corn and other grains to be sealed for government loans. With the government allowance of 10¢ per bushel for the purchase of bins, makes possible low cost storage for future years. Order now to assure delivery. Agents and Dealers wanted. Write for literature and freight prepaid prices.

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SUCCESSFUL PLANT OPERATORS SPECIFY

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Narrow boiling range Phillips 66 Solvents mean economy and improved product quality. No light ends to lose. No heavy ends left in the meal.



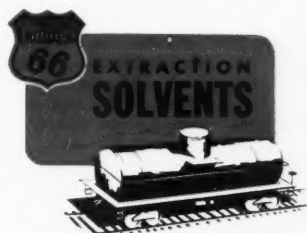
Put Phillips 66 Solvents in your system with complete assurance of unvarying high solvent quality.



A car of Phillips 66 Solvent can be on its way to you within hours of receipt of your shipping instructions.



We're glad to give you on request the benefit of our long experience in the solvent field.



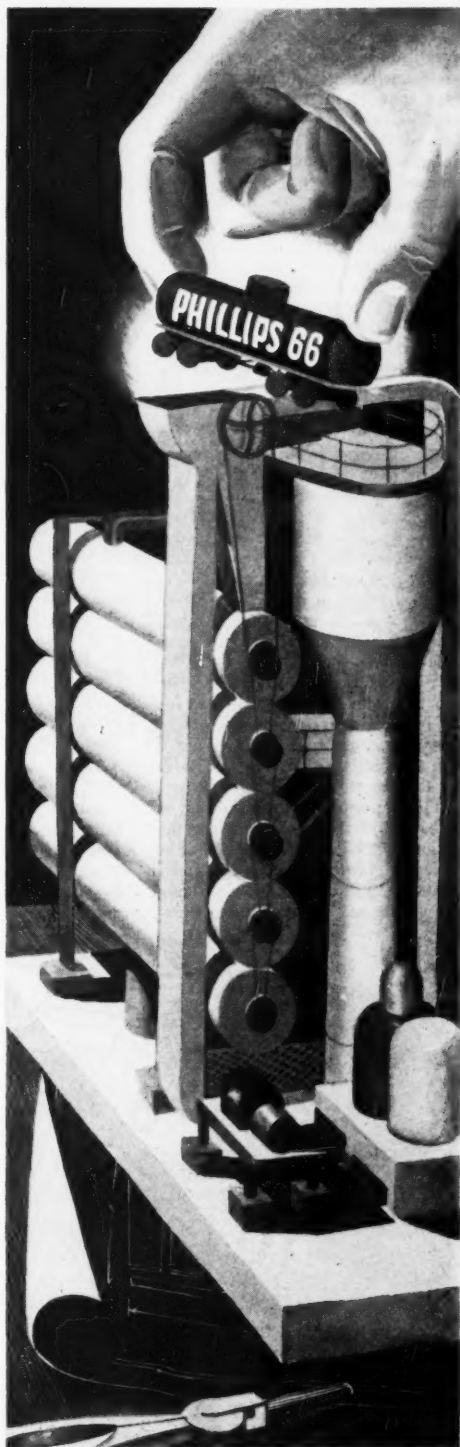
Typical Boiling Range

Normal Hexane	151-156 F
Methylpentanes	139-145 F
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WRITE US for information on Phillips 66 Successful Solvents for soybean, cottonseed, flaxseed, tung nut, rice bran, corn germ, castor bean, alfalfa, animal fat and other oil extraction industries.

SEPTEMBER, 1949



WALLEY

(Continued from page 32)

10 million bushels of soybeans from this country and a maximum of not more than 10 percent of the 1948 crop. This position was taken in view of the fact that Europe represented a potential market for a minimum of 35 to 50 million bushels of soybeans per year, and we felt that in view of the bumper crop in 1948, it was only fair that we be allowed to send a few soybeans to Europe on a "foot-in-the-door" basis.

It was also insisted upon by the American Soybean Association that this foreign demand be allowed to exert itself during the time that the soybeans were moving from the farmers' hands.

Unfortunately, however, the veto power exercised by the Secretary of Commerce in restricting exports prevented the movement of not only soybeans, but the end products therefrom at the time of the greatest demand and the most dire need in Europe. Your officers made a determined effort to convince the Secretary of Commerce that he was wrong in his position but with very little success.

It is regretted that we must write into the records that spokesmen for the National Soybean Processors at the same time used their influence with the Secretary of Commerce asking that he maintain a rigid restriction and prohibition on exports of soybeans. These spokesmen for the National Soybean Processors had a perfect right to exercise this judgment and influence and their action has in no way resulted in any un-

pleasant relations or feelings. We are still of the opinion, however, that they were in error for their own best interests, looking at the American soybean industry from the long-time standpoint. During the month of February your officers joined with other fats and oils groups and were successful in taking away from the Secretary of Commerce his veto power over exports. This was done in the extension of the Export Control Act, which action became effective as of March 1.

With the removal of these undue restrictions on exports of soybeans and soybean products, and at the time of year when those needs were less acute than in the fall and winter, we have witnessed a great demand. The equivalent of about 10 million bushels of soybeans has been exported since March 1, 1949. This entire situation has resulted in a soybean price fluctuation during the past months which has been unsatisfactory to most growers and most processors.

Today, politically and selfishly we are interested in the nutritional problems of certain sections of the world, notably Western Europe and India. The prime nutritional deficiencies of those sections are edible proteins, edible fats, and minerals. These they cannot hope to fill within their own country and within their own resources.

Edible protein and fats from soybeans are among the cheapest products which the people of those countries can buy and they constitute two items for which they have been and will continue to be willing to

spend a few of their scarce dollars. On the basis of grants and gifts from the United States, the soybean also constitutes the cheapest source of supplying those needs. Over a long period of time the American people are busy feeding themselves as far as good beefsteak is concerned and we cannot hope to send protein in such an expensive form.

What I am trying to say is simply this: with a proper utilization, and meeting only part of the enormous demand, it is possible that we can supply protein, fats, and minerals to at least part of the people of the world who need it at a price which will be highly profitable to us and will constitute the cheapest source which they can find anywhere.

In promoting this policy we certainly have no intention of penalizing domestic feed users or our manufacturers of protein feed. The domestic market has been and will continue to be the largest consumer of soybeans produced in this country. We still insist that relative price is the thing which will determine the soybean production in the United States. Most soybean processors are feed mixers. They are interested not only in the volume of protein meal but in the price of it.

Every 1 cent per pound added to the price of soybean oil has the effect of either reducing the cost of soybean meal approximately \$4 per ton or adding 8 cents or 9 cents per bushel to the price that the farmer receives for soybeans. Thus, we have the alternative of either encouraging the consumption of more protein meal or encouraging the production of more beans.

Keep in mind, also, that anything that helps the general price of fats and oils encourages livestock production, livestock feeding and the manufacture and sale of feeds.

It is upon this basis that we are constantly trying to enlist the interest of our processors in promoting a higher value usage and expanded market for soybean oil. We think of no better means that they can employ to keep up the volume of soybean production needed by them.

I love livestock and I want to see it well fed. I even love dogs and like to see them well fed. But with the sober realization that the continuation of diets deficient in protein, edible protein, fat, and minerals abroad constitutes a danger not only to me but to my children and grandchildren, I take more than a casual interest. Hope of keeping

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the balance of power in the world on the side of the democracies requires the prevention of the weakened bodies, the dull minds, and the perverted attitudes which come from nutritional deficiencies.

It is our contention that the American soybean production can be expanded to meet both our domestic and foreign demands. Basically, it is a selling job. We must educate, we must promote, we must sell at home and abroad. When we talk about selling soybeans, we mean not only beans but the products made therefrom. We commend highly the work being done by our soy flour processors in sales service abroad, a project which is being fully reported at this meeting.

"SOYBEANS ARE BIG BUSINESS" and can continue to be big business. It needs the cooperation of every grower, every handler, every processor, and every segment of the industry. Your Association approaches this problem with frankness and friendliness. A fraternal feeling must continue to prevail. Basically, we have no differences. Instead, we have a common problem. Criticism must be constructive and used only to encourage greater efforts in our common behalf.

As I retire from the presidency of this Association, I want to express to you my appreciation of the pleasure you have given me in allowing me to serve with you. I might tell you that the great thrill and pride which I am enjoying right now is the fact that I am to join such an illustrious group of former presidents. Note that I say former and not past presidents. In this Association no presidents are past. The presidency seems to be a training period preparing the man for active use by the Association in later years.

During the past year no less than 10 or 12 of the former presidents of this organization have been active in carrying out work for the Association in an aggressive and worth while manner. It is an honor to join such a distinguished and loyal group. In retiring from the presidency I pledge you my continued interest and devotion.—ERSEL WALLLEY, Fort Wayne, Ind.

Report of Secretary-Treasurer

Fiscal year 1943-49

For purposes of brevity and clarity I will divide this report into several sections. The first is a general review of the activities and the pro-

gress of the organization during the year.

You will recall that 1 year ago I presented to this organization the proposal that the board of directors should give serious consideration to raising the membership fee in the American Soybean Association, and that at the same time they should consider the desirability of increasing the rates on advertising space in the Soybean Digest. At that time we were being caught in a squeeze between rising costs and

revenues which were on the same basis as in past years. At the meeting of the board of directors which followed the convention action was taken to increase the membership fee, and on January 1, 1949, that fee was raised to \$3 per year, from the old \$2 rate.

On that same date the rates on advertising space were also raised so that they more nearly represent the true value. The advertising rates up to January 1 of this year were those established in 1944, and

CHEMOIL NEWS

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A 44% protein solvent extracted soybean oil meal and a complete line of technically refined soybean oils are produced at Belmond to meet the exacting requirements of the trade. Write today for samples of these products or call us for quotations.



General Mills, Inc.

CHEMICAL DIVISION

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Minneapolis 1, Minnesota

Ladies: Hope you enjoyed your visit to the Betty Crocker Kitchen on September 6th during Convention week. Drop in again when you are in Minneapolis!

in the meantime the costs of paper, printing, postage and all other items had risen tremendously. Advertising contracts completed before January 1, 1949, carry the old rate, hence it will not be until January 1, 1950, that we reap the full benefits of the rate increases. It is anticipated that when those rate increases all take effect our publication will be on a sound financial basis in spite of our increased costs.

Incidentally, contrary to our expectations, our printers presented us with a contract carrying increased costs last June—at a time when all

other costs are going down.

Legislative activities have occupied a large portion of the time of your secretary, your president, and a portion of the time of your field director this year. One of the major items upon which we worked was the margarine bills. Again the House of Representatives agricultural committee held hearings, again we had a delegation present. This year it was our pleasure to have some splendid support from among the processors of soybeans, even though the processors association still maintained its policy of letting

someone else carry the ball on legislative matters which directly affect the soybean industry and the markets for soybean products. That assistance from individual processors was most helpful.

The Senate finance committee reported HR 2023, the bill which came out of the House of Representatives, favorably and unanimously, with recommendation that it receive immediate attention. It is still awaiting action on the floor of the Senate.

Anti-margarine bills in several of the states have also been up for consideration this year. Tennessee, California and Michigan have passed legislation removing state restrictions on manufacture and sale. We also took part in hearings in Kansas. In Ohio, where your organization spent a large amount of time and effort a margarine repeal bill was brought to the legislature by petition. The Ohio legislature failed to act, hence the matter comes to a vote of the people in November. The Ohio dairymen have organized themselves, raised a war chest of \$100,000, and are making a determined effort to defeat the proposal which would allow the sale of yellow margarine in that state. We have a job to do there—most residents of the state do not know the true issues at stake, and certainly will not have a chance to get them from the opposition. We must make known the stake of soybeans in free markets for American farm commodities, regardless of prejudices and animosities.

During this past year your officers have spent a large amount of time on those factors affecting the price of soybeans. As your president told you last year, "When the chips are down, price will determine soybean production." At the convention a year ago your board of directors spent a large amount of time with a representative of the Secretary of Commerce suggesting export allocations of soybeans. At that time the Secretary of Commerce had complete veto power, under the Export Allocations Act, to release commodities produced in this country for export purposes. During the fall months the men in the Department of Agriculture repeatedly sent over recommendations for sizable allocations of soybeans for export. European and Asiatic nations requested supplies. Repeatedly and consistently—nothing happened.

On November 30 I personally sat in the office of the Secretary of Com-



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- Unloads all sizes of Trucks and Tractor Trailers.
- Sizes—40'x10', 45'x10', and 50'x10' Platforms. Other sizes on special order.
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UNLOADS all sizes of Trucks and big Tractor Trailers in a "jiffy." Takes all the time-stealing hard work out of unloading, eliminates waiting time and keeps trucks on the go. In less than 2 minutes they're unloaded and on their way. You save time, work, money!

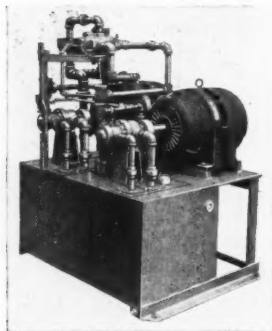
Powerful TWIN Hydraulic Unit. Raises to full height in 41 seconds, lowers in 20 seconds. Maximum safety because of "oil-locked" hydraulic control and cushioned lowering. No danger of accidents.

Easy operation and simple controls . . . one man operates the Dumper and Wheel Stops from one location where he can see and control the complete unloading operation. Greatly reduces labor costs.

Evidence of KEWANEE performance and economy is overwhelming. It is substantiated by successive repeat orders from leading firms who have installed them at all their plants.

One elevator reports unloading more than 1,000,000 bu. of grain in one month's operation with a two man crew, averaging over 100 trucks each working day.

The KEWANEE Dumper will widen the area you can serve and increase your volume. Truckers appreciate "no long waiting in line" and they tell others. It attracts new customers and builds your business. Find out *today* how KEWANEE will solve your unloading problems.



Powerful TWIN Hydraulic Unit

Write TODAY for Bulletin HD-4

KEWANEE MACHINERY & CONVEYOR CO., Kewanee, Illinois

merce for 45 minutes discussing the necessity of releasing quantities of fats and oils and oilseed crops for export, because huge surpluses were piling up in this country. I was given assurance something would be done. I pointed out that it should be done immediately, while the price would be reflected back to the man who grew the crop, rather than after the crop had all left the growers hands. I felt, when I left Mr. Sawyer's office, that he was sincere and that something would be done.

The day following my visit representatives of another segment of our industry followed me. They insisted that there be no exports. Their wishes prevailed. Soybean prices took a man-sized slide. This year's acreage is down, according to government figures, 6 percent. My personal figure is considerably higher. The processors of soybeans are increasing their capacities, will have fewer beans upon which to operate. Much of this must be attributed to the fact that world prices were not allowed to exert their influence on our domestic markets during December, January, February and March. Farmers became disgusted with market manipulations, and reduced soybean acreage. Had a small bushel-age of beans been allowed to go into export channels this would not have happened.

In February the American Soybean Association teamed up with several other fats and oils groups to secure amendments to the Export Allocations Act as submitted by the president. Power to control exports

of agricultural commodities was taken away from the Department of Commerce, put back in Agriculture, where it belonged. During March, April, May and June nearly 10 million bushels of soybeans were exported. You know, from personal experience, what that did to prices. If the American Soybean Association accomplished nothing else during the year it returned to soybean growers who had held their beans millions of dollars in additional revenue through this one move alone. In addition, and the really important factor in the picture, it opened,

somewhat belatedly, the door to world markets for our American soybeans. It gave other nations a chance to try our soybeans, learn their true values.

Significantly, all during this period our American soybeans have been the *cheapest source of edible oil available at any point in the world*. If supplies of dollar exchange were available in some way there would be an almost unlimited market for our American soybeans. Later today you will hear some of this story. It is extremely significant that with our mechanical pro-

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and

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Regrinding and Corrugating service for Oil Mill rolls of all sizes from 6" to 36" in diameter, and from 12' to 144' long. All types of Special Soybean and Oil Mill roll corrugations furnished on request.

New rolls supplied with journals made up to fit any type roller mill.

DESIGNED LAYOUTS

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for your convenience

In stock for your convenience, Philadelphia Motoreducers, motors, motor bases and starting equipment. Morse Silent and Roller Chain drives, Reeves Variable Speed Drives, Screw Conveyor Equipment, including all types of fittings.

Elevator Buckets, elevator bolts, elevator belting, elevator accessories.

Steel elevator heads, boots, and legging made up to specifications on short notice.

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Dr. W. M. Myers of the Bureau of Plant Industry, Beltsville, Md., gave an informal discussion illustrated with lantern slides of his recent trip to Japan at the American Soybean Association convention. He has been head agronomist in charge of the Division of Foreign Crops and Diseases at the Bureau since January 3.

duction methods and improved varieties we can, in spite of our high costs and living standards, compete with other parts of the world on a cost basis on the soybean crop.

More recently your president went to Washington to testify before the House agricultural committee on a bill which has been introduced into the House which would, in effect, levy an import duty on all fats and oils imported into the United States

in excess of our exports. Your secretary appeared before the Gillette sub-committee of the Senate agricultural committee on the investigation of causes behind the slumps in fats and oils prices this spring. We have filed other briefs with committees, have concerned ourselves with all legislation which pertains to or affects the soybean crop.

One of the decisions facing the soybean industry right now is that

of where the producers of the crop stand on placing soybeans on the basic commodity list under the price support program. An amendment was introduced in the House agricultural committee during the hearings on the Brannan Bill which would have removed peanuts from the basic commodity list if we want it and will work for it. We must decide. It is a basic decision now facing the industry, one which must be met head-on.

Yesterday morning you heard the report given by Paul Hughes of our field service division. I will not report on it at this time, except to say that the first year has been one of trial and error. Results have not been as favorable as was hoped. Perhaps we started at the wrong time—times have been too good and money too plentiful. History has shown that successful commodity organizations based on crop deductions or payments have been built when an industry had its back to the wall—and the soybean industry has not yet reached that place. We hoped to get our program underway and be ready for the slump. Results of the past year's work as collected on the 1949 crop will tell the tale. We will know in a few short months where we stand.

Financially, your organization is not in as good position as it was a year ago. Our auditor's report shows a loss of about \$400 on the year's operations. About \$2,500 more was expended on the field program than was received from it during the year. If, as is hoped, that program brings results from the 1949 crop then the year's work should show up as profitable. When your board of directors authorized the program 2 years ago it was decided we would, if necessary, cash the bonds the Association owns in order to launch the program. We have never cashed those bonds, as it has not been necessary up to this point.

At this time it would appear that increased advertising revenue from The Soybean Digest should carry more of the load of the organization operations this year. That increased income, coupled with prospects for a sound approach to the field service financing, would make it appear that the association should again operate in the black—after 2 successive years when the outgo exceeded the income.

At this point I would like to pay tribute to the man who has served as president of the American Soy-



E. F. "Soybean" Johnson in the office of Delphos Grain & Soya Products Co., Inc., Delphos, Ohio, where he is grain and soybean buyer. In one of the nation's heaviest soybean producing areas, the firm has storage for 750,000 bushels of soybeans. A 3,000-bu.-daily-capacity solvent extraction plant was installed last year. Johnson has been a long-time reader of the SOYBEAN DIGEST. He and the Delphos firm are consistent advertisers in its columns.

\$1½ Billion Market

Key men in all full-time soybean processing plants in the U. S. are readers of the SOYBEAN DIGEST. It also goes into the plants of most part-time operators. SOYBEAN DIGEST is read by men who do the buying, who make important policy decisions.

These firms range from 1-Expeller outfits to multi-million-dollar concerns with plants in a half-dozen states. The 1949 **Soybean Blue Book** lists 207 soybean processing plants in 27 states and Canada. These plants employ nearly 10,000 people, pay about 25 million dollars annually in salaries and wages. Value of the processed crop is over 600 million dollars. The industry represents a 350-million-dollar investment, with well over 10 percent of this being spent annually for repairs, replacements and equipment.

This market you can reach most effectively through the pages of the SOYBEAN DIGEST, the only magazine devoted exclusively to the soybean field.



SOYBEAN DIGEST circulation is concentrated in the leading soybean states of Illinois, Iowa, Indiana, Ohio, Missouri, Minnesota and Arkansas. It reaches into 44 of the 48 states, Washington, D. C., and most foreign countries where soybeans are grown. The DIGEST is read by producers, grain handlers, manufacturers and others interested in soybeans as a crop and an industry, as well as by processors.

Address Inquiries to the
SOYBEAN DIGEST, Hudson, Iowa

bean Association during the past 2 years. Ersel Walley has spent untold days and weeks of his time working in behalf of the Association. He has written speeches, written pamphlets, made numerous appearances in Washington, directed our efforts in the Ohio margarine battle—all without remuneration. He has, I feel sure, spent more than a solid month of his time working in your behalf this year. A year ago he had spent almost 2 months working for you. In my estimation the American Soybean Association owes him a deep debt of gratitude for the time, effort, ingenuity and thought which he has given to his job. I feel sure that most of you, other than perhaps the board members, have no conception of the contribution which Mr. Walley has made to the industry during this past 2 year period. I sincerely hope that provision will be made by the Association and the board of directors to continue to utilize his contacts and his knowledge in behalf of the industry. While the by-laws of the American Soybean Association provide that the president may not hold that position for more than 2 years consecutively, they do not indicate that the full talents and abilities of a man shall not be utilized after his retirement as president.

At this time I would also like to express to the staff in the Hudson office my appreciation for their co-operation, loyalty and assistance. Without their interest and assistance it would have been impossible to have done the work, get out the Soybean Digest and the Soybean Blue Book, do the other important jobs which were turned out during the year.

In closing I would like to again point out that in my estimation the major function of the American Soybean Association at this stage of the game should be that of doing everything in its power to place soybeans in a favorable price relationship with other crops. By so doing, soybean acreage will be maintained, processing mills will continue to operate, the true values of the protein and the oil contained in the crop will be made available to the peoples of the world to whom nutrition is and will continue to be a major problem. That involves education, legislation, research and promotion. Therein lies the field of operations and the justification for an organization such as ours.—GEO. M. STRAYER, Secretary-Treasurer.

A few of the women who went on the tour to Betty Crocker's Kitchen as guests of General Mills. Mrs. Mabel Martin, GMI product counselor (back to camera), discusses a recipe with: left to right, Mrs. Jake Hariz, Jr., Stuttgart, Ark.; Mrs. John Gray, Baton Rouge, La.; Mrs. Maurice Maze, Mexico, Mo.; and Mrs. Geo. L. Sparks, St. Louis, Mo.



Resolutions

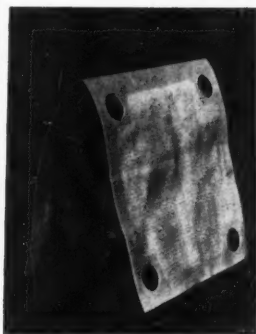
I.

Again the successful production of an extensive soybean crop justifies the hope of the American Soybean Association that every effort will be made to provide both domestic and foreign markets for soybeans and their products. Both have been distributed on a sellers' market during the recent years of heavy production. The importance of quality products has sometimes been overlooked under these conditions. To retain the gains that have been made, it is extremely important that

producers and handlers of soybeans, and especially beans intended for export, realize the importance of distributing soybeans of satisfactory commercial quality. Only by providing beans of superior quality can foreign markets be retained.

It is likewise highly important that all commercial products be of such satisfactory quality as to continue and increase favorable reaction toward them.

Research work both by experiment stations and industry should be expanded and especially in the field of utilization of soybean pro-



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teins in human foods and livestock rations.

General appreciation of the importance of soybean oil in commerce and of sympathetic interest on the part of members of the soybean processing industry is especially desirable.

II.

In view of (1) the need of a sustained and economical source of edible fats and oils to meet our domestic and foreign needs and (2) the necessity of maintaining in this country adequate supplies of protein feed to supply an expanding grassland-livestock production, and (3) the dire need for edible vegetable proteins for direct human consumption and (4) the fact that soybeans are the practical crops adjustment factor in both our cotton and corn areas; soybean farmers should forego the benefits of the rigid high governmental support prices extended to the so-called "basic commodities." We believe that it is in the best interests of our national agricultural economy to keep the acreage and production of soybeans in this country flexible and voluntary.

III.

In view of the fact that it is common knowledge that emulsifiers or as they are sometimes known, fat extenders, are being used in food products along with fats and oils, we reaffirm our stand taken in years past regarding the labeling of food products. The food products containing emulsifiers should be plainly labeled in order that the public be given full knowledge of the product being offered for sale.

IV.

All American agricultural products should be allowed an equal opportunity. Discriminatory taxes and regulations against the produce of American farms should be removed

and specifically those against the edible products made from domestic oils.

V.

The American Soybean Association heartily endorses the efforts of the CROP program, the Meals-for-Millions program, and any other similar programs. The high protein value of soybeans in providing adequate nutritional levels for the populations of our own and foreign nations should be especially recognized in such relief activities.

VI.

There is a definite need for this Association to be strong and well-financed in order to promote and to protect the soybean producer, the soybean industry and the products thereof. The members of this Association endorse the continuance of the Association's finance program in their respective localities and pledge their support to this end.

VII.

The Association expresses its sincere appreciation to our hosts, the Nicollet Hotel; its thanks for our warm welcome from officials of the state of Minnesota and civic officials of Minneapolis and St. Paul; our appreciation of the generous hospitality of the firms of Archer-Daniels-Midland, General Mills, Pillsbury, and Cargill, Inc., and all other members of the convention planning committee; our gratitude to the University of Minnesota, especially Dr. J. W. Lambert of the agronomy department, for plans for a most interesting field trip; our thanks to the convention committee, and the special efforts of John Evans, chairman, for the splendid arrangements for our convention; special appreciation and gratitude to our president, Ersel Walley, and Secretary George Strayer, who have given so freely of their efforts to greatly increase the prestige and influence of

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the American Soybean Association during the past year, to the other officers, directors, committees, and staff of the American Soybean Association, to the entire soybean and allied industries, to the speakers of the convention, and to all others who have contributed to the success of this convention.

VIII.

Be it resolved that the foregoing statements be the sentiment of the membership meeting of the American Soybean Association and that copies of these resolutions be supplied to all parties mentioned therein.

— s b d —

LIFE MEMBERS

(Continued from page 36)

soybean pioneers and leaders of the South. He was looking for a soil building crop to save the rice farmers of the Grand Prairie section of Arkansas who were driving themselves to ruin with a one-crop program of rice. Rice takes a tremendous amount of nitrogen from the soil and nothing was being done to replace this needed element.

In conjunction with the Peoples National Bank of Stuttgart the Hartz-Thorell Co. bought 25 bushels of Laredo soybeans. These beans were put out with key farmers over the Grand Prairie in small quantities and were planted on land that had been in rice the previous year. When the beneficial results that followed were noted a never ending search for the most suitable varieties was begun. Mr. Hartz and his partner soon found themselves in the seed business where the former has remained ever since.

Mr. Hartz had a manifold job, chief of which his boys have always referred to as "Pop's Preaching the Soybean Gospel," to farmers and agricultural leaders in Arkansas and the South. In their contacts and travels many years later they are continually running into men who say that Mr. Hartz started them in the soybean business. He found a market for the farmer's bean crop and was instrumental in having favorable freight rates established for soybeans and other Arkansas farm products.

In 1936 the Hartz-Thorell Supply Co. designed and constructed what remains the most modern and efficient seed cleaning processing plant in the South.

The Hartz-Thorell partnership

was dissolved in June, 1942. Mr. Hartz and his two older sons, B. J. and Jake, Jr., acquired the seed end of the business which they operate under the title of Jacob Hartz Seed Co.

Mr. Hartz worked diligently in several seed organizations such as the Arkansas Seed Growers Association, the Arkansas Seed Dealers' Association, and the Southern Seeds-men Association. He was elected president of the first two and first vice-president of the third, a South-wide seed dealers association. In all of the organizations he has fos-

tered the soybean and guided its progress. He served many years on the Arkansas State Plant Board. In this capacity he helped in the first certification of soybean seed in the state.

There is one other organization that he has helped to build, one that is dear to his heart, the American Soybean Association. He was elected the first Southern director and has served in that capacity until the present. He is a former vice president of the Association.

The above are some of the things



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that long ago earned for Mr. Hartz the deserved title of "Soybean King of Arkansas."

E. F. Johnson

E. F. Johnson, affectionately known as "Soybean" by an entire industry, has been a real pioneer and has made a contribution both as a grower and processor.

He was born at Stryker, Ohio, 59 years ago. He received his education at the University of Indiana, Purdue University and Ohio State University.

He started his first soybean plots in the spring of 1912 and has been a grower ever since. At present he is a producer of edible varieties. He was a teacher of extension work for 7 years and an assistant professor for 2 years. For a time he was agricultural director for the Soo Line. He is now affiliated with the Delphos Grain & Sova Products Co., Inc., at Delphos, Ohio.

He has served as president of both the American Soybean Association and the National Soybean Processors Association, and as treasurer of the latter organization. He has



—Photo by Soybean Digest

Three U. S. Regional Soybean Laboratory agronomists talk things over at the ASA convention. They are, left to right: Dr. Lewis Saboe, Columbus, Ohio; Leonard F. Williams, Urbana, Ill.; and Albert H. Probst, Lafayette, Ind.

been actively interested in the National Farm Chemurgic Council since its inception.

Mr. Johnson has always been very active in the work of the American Soybean Association, serving on pro-

grams and committees. One of the early annual meetings of the Association was held on his farm. He was one of those whose efforts and encouragement brought about the founding of the Soybean Digest.



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BRIERLEY

(Continued from page 45)

one major factor that could put new value behind the soybean it would of necessity be this: the widespread human consumption of soy protein.

This reasoning appears self-evident. There is a saturation point in the consumption of soy protein in animal and poultry feeds. When maximum livestock and poultry numbers are attained in the domestic market, then our broader field for soy protein consumption must come in the category of human intake. And the surface of this latter field has hardly been scratched. Startling as it may be to some people, there are vast numbers of persons in prosperous America whose diet is lacking in protein. In less booming times, in days of substantial unemployment, this number of persons experiencing protein-deficiency expands tremendously.

It is an arresting fact that in all of our government's humanitarian welfare efforts in this country and in the many lands across the sea, only slight advantage has been taken of the possibilities offered by

this superior soy protein which, though surprisingly low in cost, can perform the functions of high priced proteins.

Bear in mind that soy flour is not on trial. It has been endorsed by the most brilliant government nutritionists. It performed a remarkable war and postwar service in some 26 foreign countries. It has been used for years in many of the products you consume in your homes.

But bear in mind, too, that nutritionists are not the buyers of food supplies in the government feeding programs. When shortages, coupled with intelligent, aggressive promotion of our soy flour gave that product the chance to prove its worth, usage in the government programs was substantial. When the higher cost proteins became available, the programmers went back to the beaten tracks, to the products involving greater expenditures, regardless of the heavier burden on the taxpayer.

Let me say to you in all sincerity that if those responsible for the various foreign feeding programs cared to do so today they could use edible soy protein in such volume as would make soybeans worth more money and at the same time make

tremendous savings in costs. That would indeed put new value behind the soybean.

Congress has begun looking more closely at the costs of feeding programs, and now and then questions are being asked as to the relative costs of various items in those programs. It is possible that more attention will be given to the subject. Cost comparisons might result in considerable embarrassment to some of the planners.

Meantime our Soya Food Research Council and our Soy Flour Association are continuing the drive for better products, for better understanding of the many functions of edible soy flour, and for broader fields of consumption. This work goes forward progressively, with fine disregard for the calculated competitive opposition and the little quibblers who would delay development to some misty future day when conditions were perfect.

Canal boat operators fought the on-coming railroads; horse breeders fought the tractor; buggy-whip manufacturers scoffed at horseless carriages. Yet progress rolled forward in a land of progressive people.

Just as surely edible soy protein will take its proper place in the economy, and it will add to the value of the soybean.

— s b d —

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SKOVHOLT

(Continued from page 51)

ies contend that nothing is gained by increasing the fat content above about 1½ percent in ordinary white bread. Other bakers feel that there is an advantage in using up to 3 percent or 4 percent of fat. Recently a campaign has been started by a leading baking journal which advocates a 6 percent fat level. Possibly all of them are right. The characteristics of bread are changed somewhat by this variation in added fat. Consumers vary in taste and many of them like variety. Maybe one baker should use 1½ percent shortening in bread and another 4 percent or even 6 percent in order to supply variety. Or maybe the larger individual bakers should make two kinds of loaves that vary in shortening level and percentage of other enriching ingredients.

These synthetic emulsifiers make better bread possible. It is better from the standpoint of physical characteristics and especially because it is reduced in perishability. The emulsifiers may show to best advantage when fat levels are low but they are useful with any formula. They may replace fat to some extent in bread production without change in quality, but the amount of such possible replacement, without alteration in product characteristics, is quite small in my opinion. In cake production the opportunity for such replacement is even less.

All evidence points to the complete harmlessness of these emulsifiers. If this is proved and they improve baked products when properly used, and in the very low levels required, it would seem to be in the producer and consumer interest to accept them as the result of progress. There is no significant threat to fat markets involved, in my opinion. Any small reduction in fat levels used in certain products might be more than compensated for by an increase in consumer demand for these products because of improved palatability and keeping quality.

COWAN

(Continued from page 50)

The effect of sorbitol, a polyhydric alcohol, led us to consider plant trials with it, and two refiners have cooperated with us in this matter. Table VIII shows the data we obtained in one commercial plant trial. Note that the taste panel had a preference for the original flavor of deodorized samples containing sorbitol and that sorbitol improved oxidative stability.

Our present research is now directed toward further studies on oxidation. The flavor stability of soybean oil is almost directly related to the logarithm of its peroxide value. Figure 4 shows the graph of flavor score versus log of peroxide of different samples of soybean oil from the same barrel of oil. The correlation coefficient is actually 0.8 or 80 percent. Consequently, we believe the "reversion" problem is an oxidative one.

For the past year, the Research and Marketing Administration has been supporting contract research at the University of Pittsburgh to isolate and identify these oxidation products of soybean oil. Progress is definitely being made on the identification of the flavor products.

Research on metallic fixatives is being extended and we feel certain of having new and interesting information to report in the future. A fundamental investigation of the minor constituents of soybean oil and their relationship to flavor stability is now underway. It is believed that a solution to the problem will be found. Economic considerations will determine if it can be applied commercially.

— s b d —

ANDREWS

(Continued from page 42)

and control conceived by man on the free flow of goods and capital between countries—especially to the dollar area.

In other words, state trading has taken over—either directly or under all-inclusive government supervision. Trade does not develop between states and the more that states interfere with the free flow of trade the less trade there is. This business of control grows like an octopus. First a great area of land and industry and people come under control, then each little segment of the state enterprise has its special rig and special protection. The first thing one knows, there are so many people who can say "no" to legitimate trade in the name of protecting this or that business that trade simply dries up.

It's pretty much that way in this country: try as we will to lower tariffs and increase buying from other lands in order that we may sell, there is hardly an industry or enterprise in this country from cherry producers to watch makers which is not demanding protection of some kind.

A little earlier in this talk we mentioned the Marshall Plan and what it has done for Europe. In short the Marshall Plan has helped Europe to lick the production job. We licked the production job in this country long ago. What we haven't licked and what is today the challenge of the present-day world is trade and distribution of the bounty which modern production has given us.

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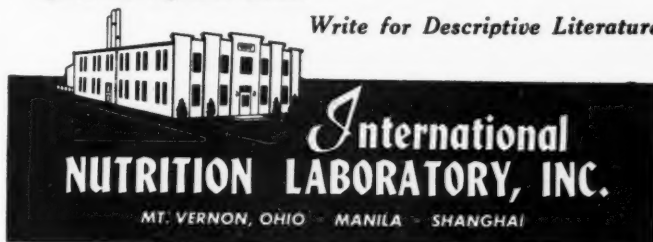
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STRAYER, CARTTER TO EUROPE FOR ECA

Geo. M. Strayer, secretary-treasurer of the American Soybean Association, Hudson, Iowa, and J. L. Cartter, director of the U. S. Regional Soybean Laboratory, Urbana, Ill., left New York City September 16 by air for Frankfurt, Germany on a 6-week technical mission for ECA.

While abroad Strayer and Cartter will analyze the soybean production program in various European countries under the Marshall plan. They will check varieties and the

breeding work on the soybeans that are being raised for food in these countries.

The two men will also appraise the use of U. S.-grown soybeans in European food products. They will visit manufacturing plants making these products to seek possible recommendations for ECA and U. S. soybean growers on how best to meet European needs. Manchuria supplied the European market for soybeans before the war, but European

countries are now depending on U. S. soybeans.

The trip is being financed entirely by ECA funds.

Countries to be visited include Germany, Denmark, Sweden, Holland, Belgium and possibly France. Headquarters will be at Frankfurt.

— s b d —

TO VOTE OF PEOPLE

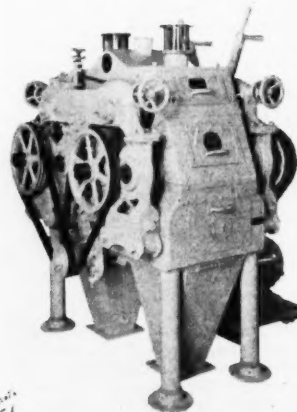
Voters of Ohio will decide on November 3 whether that State will adopt a law to permit the manufacture and sale of yellow margarine. Supplementary initiative petitions for the purpose of placing the issue on the ballot were filed July 30 with the Ohio Secretary of State, Charles P. Sweeney. The petition contained the signatures of 226,381 electors, more than three times the number required.

Following the defeat of the proposed legislation by the 1949 General Assembly it was necessary for the bill's sponsors to obtain additional signatures in the amount of 3 percent of the number of electors who voted at the previous general election.

The petitions contained the signatures of voters from every county in Ohio, while the law required that signatures be obtained from at least 44 counties equal to 1½ percent of the total vote for governor.

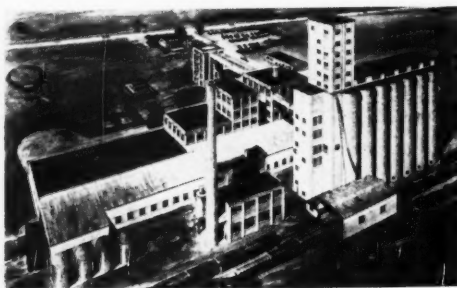
— s b d —

NEW ROLLER MILL



Barnard & Leas Mfg. Co., Inc., Cedar Rapids, Iowa, announces current production on a newly designed line of roller mills. This complete roller mill line includes Model "49" double roll stands, single pair, two pair high, three pair high and flaking mills. The new design incorporates features of sanitation, adjustments and efficiency which are in line with the milling demands of today, the manufacturers say.

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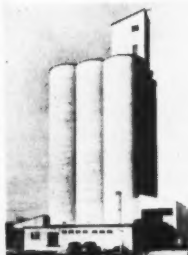
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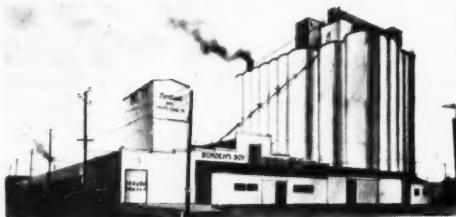


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Ed O'Connor, Manager

FROZEN SOY PRODUCT TESTS DAIRY LAW

Attempts by the Kansas State Board of Agriculture to halt the sale of "Soya Frozen Dessert" in Kansas have been thwarted by a temporary restraining order obtained by the distributor. The product is being sold in the Wichita area pending interpretation by the court of a new dairy law passed by the last Kansas legislature.

"Soya Frozen Dessert" is made of soybean oil, milk solids, sugar, stabilizer and is artificially colored. When Steffen Dairy Foods Co., Wichita announced the introduction of the product at local soda fountains with a new firm, Dairy Belle, Inc., as the distributor, Harry E. Dodge, state dairy commissioner, said immediate action would be taken to halt the product's sale.

Dodge said his opinion was that sale of the product violates the Kansas general statutes and also House Bill No. 406, passed by the last legislature, both of which prohibit selling any fat other than milk fat mixed with milk products.

The restraining order against Dodge and J. C. Mohler, secretary of the State Board of Agriculture followed. It is expected that the case may be heard in September or October.

Says L. A. Deck, vice president of Steffen Dairy Foods Co.: "Frankly, we don't believe it will affect the sale of ice cream. We are attempting to reach a lower income group with this product that we are not reaching with ice cream. The product is a very fine product, very tasty, and very nutritious."

Says Dodge: "Should the restraining order be dissolved, action can be taken against manufacturers and distributors of this and similar products doing business in Kansas."

It is up to the courts, the legislature and finally the people to decide whether the dairymen shall have an eternal monopoly of this type of business in Kansas.

Soya Frozen Dessert package



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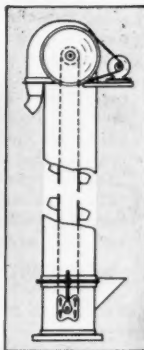
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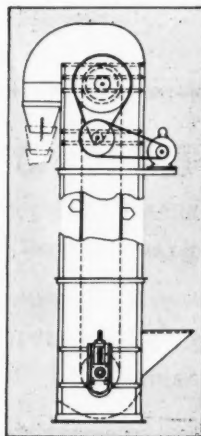
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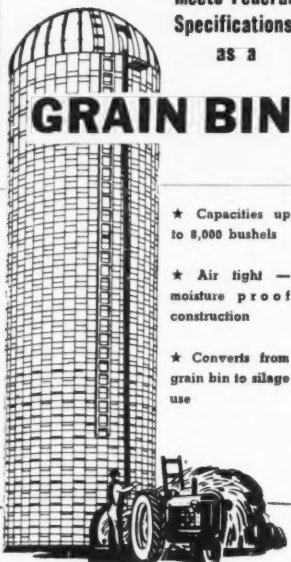
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Some of the Portageville, Mo., Jaycees who made the soybean festival a success there last year. Most of them are now at work on this year's event.

HOLDING 1949 SOYBEAN FESTIVALS

The second annual National Soybean Festival and Exposition at Portageville, Mo., Oct. 12-15 will be an even bigger event than the first soybean festival held there last year.

That is the plan of the Portageville Jaycees, who will sponsor the event again in 1949. Between 10,000 and 15,000 people took part last year.

Portageville has adopted the American Soybean Association slogan, "Soybeans Are Worth More Money," for its theme.

Events will include field combining demonstrations by farm machinery manufacturers, a carnival, parades for young and old, and the selection of the 1949 soybean queen.

The big program will be held at

the site of the combining demonstration Friday afternoon, Oct. 14. Invitations to attend have been issued to American Soybean Association officials, Secretary of Agriculture Charles Brannan, Governor of Missouri Forrest Smith and to Clifford Cooper, national Jaycee president.

The annual beauty review and selection of the soybean queen will follow Friday night, with \$1,000 in government bonds awarded to the winners. All young women of 16 years or older are eligible to enter. They may be sponsored by any individual, city or organization.

On September 22, 23, the Taylorville, Ill., Junior Chamber of Commerce will hold its third annual Soybean Festival. For the past 2 years

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this festival has been one of the highlights in the fall program of the Jaycees.

The event will be opened Thursday, September 22, at noon with a parade consisting of floats of the various businesses and civic organizations, together with the high school bands of Christian County and boy scout organizations.

After the parade, Taylorville will be bombed by soybeans from the air and prizes will be given for the recovery of certain soybeans.

Highlight of the first evening will be the crowning of "Miss Soya" as soybean queen of the world. Following this there will be square dancing in the street.

Program for Friday, September 23, will consist of entertainment by WDZ artists from Tuscola, judging of the soybean exhibit and another street dance.

As in the past the festival spirit will prevail in Taylorville, with rides and concessions in the business district.

Last year Miss Carol Moore of Taylorville was crowned "Miss Soya."

- s b d -

WHY OF REPEAL DELAY

The Democratic policy committee of the Senate must share responsibility with Majority Leader Senator Scott W. Lucas for delay in bringing the margarine repeal bill up to vote.

Lucas wrote this recently in a letter to the editor of the St. Louis Globe-Democrat in answer to an editorial by that paper, "Up to Senator Lucas."

"As a member of the Senate finance committee I supported this legislation last year and this year, and that support will be continued when we reach the bill on the calendar," stated Lucas.

"I need not tell you that the Senators representing the dairy states in the Northwest have promised an all-out fight on this bill. In fact, they have said off the floor of the Senate that they would filibuster it to death if possible. This threat has in no way deterred the undersigned from the ultimate consideration of this measure. However, the policy committee has felt from time to time that other measures had priority and consequently the margarine bill has been deferred.

"Personally I favor passing it before we close this session."

OPEN IOWA LABORATORY

Woodson - Tenent Laboratories, Memphis, Tenn., will open a new laboratory at 1514 High St., Des Moines, Iowa, about October 1. W. D. Simpson will be chief chemist and manager.

Simpson has had 21 years experience in the analysis of soybeans and cottonseed and their products and has been assistant chief chemist for the firm's Little Rock, Ark., laboratory.

The Des Moines laboratory will specialize in all types of analysis

for soybeans, oils, meals and feeds and will be equipped with the latest type equipment.

Expansion of the Woodson-Tenent Laboratories to Des Moines was prompted by the increased production of soybeans in that section and in order to give the mills prompt service. The Des Moines laboratory will be equipped to handle a large volume of work.

P. F. Woodson and E. H. Tenent opened their first laboratory in Memphis in 1935. Now they also operate laboratories at Blytheville and Little Rock, Ark., and Cairo, Ill.

We are in this together

IT TAKES TWO to make the soybean team — grower and processor. We are in this together.

Without good farmers to raise the beans, processors would find their vast investment tied up in idle plants. Hundreds of other industries would suffer from lack of the important products they now obtain from soybean processing and refining.

Looking at it from the other side, processors provide growers with a market of such size that soybeans have become the **SECOND LARGEST CASH CROP** in most cornbelt states. In many localities, soybean money is No. 1 money for farmers.

All this in a few short years. Out of the rapid development has come the potent team of grower and processor pulling together toward new and greater successes with the soybean, young giant of the Cornbelt.

Pillsbury Mills, Inc.

Feed and Soy Division

Soy Processing Plants in Clinton and Centerville, Iowa

DISCUSS WHY OF FATS, OILS MARKET DECLINE

Fats and oils research was discussed at a conference of producers, industry representatives, U. S. Department of Agriculture officials and others in Washington August 4 and 5. At the meeting, called by the Agricultural Research Administration, suggestions were sought for work to be undertaken in response to provisions in the Agriculture appropriation for 1950 which specifically earmarked \$225,000 for fats

and oils research under the Research and Marketing Act.

Department officials reviewed with the conferees the economic and technological developments that led to recent serious declines in fats and oils markets, and the congressional reports concerning research expenditures to help cope with the situation. They also summarized research work related to fats and oils presently conducted by the Department with funds supplied by the Research and Marketing Act as well as other appropriations.

HOW TO SELL SOYBEANS

- To get the highest price at the time you sell your soybeans . . . sell to your local elevator man who deals with Cargill. Prices, conditions, demand and supply change by the moment, but through a fast-operating private wire network connecting all principal markets, your local elevator man can give you up-to-the-minute quotations. Sell wisely at the highest price . . . sell to your local elevator man who deals with Cargill.

HOW TO BUY SOYBEAN PRODUCTS

- If you're a dealer or manufacturer who uses soybean oil meal or linseed oil meal, there's a Cargill plant nearby to give you fast, efficient service. Just write, phone or telegraph your order for Cargill 44% Soybean Oil Meal, 41% Soybean Oil Meal or Cargill Linseed Oil Meal. Your nearest Cargill plant will give you prompt delivery.

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- WASHINGTON, IOWA

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Recognizing the interdependence of prices and to a lesser extent the interchangeability of uses of fats and oils, it was suggested that the approach emphasize increased uses and markets for fats and oils as a whole. The Department was encouraged to avoid spreading the money over too many projects. Most efficient expenditure of funds could in the view of the conferees be attained by expanding going projects in the Department's program for direct research on utilization and marketing. New projects should be considered only where they can be effectively initiated with limited funds.

Among the immediate problems recommended most highly for attention was utilization research designed to improve the competitive position of natural fats as raw materials for the production of industrial chemicals, including detergents, emulsifiers and coatings.

Marketing research seeking new and expanded market outlets was favorably received by the conference. Special emphasis was urged for marketing investigations of products encountering direct competition from synthetics. It was further suggested that exports be stressed. Exports were regarded as especially important in the interim period until the natural fats and oils industries could become adjusted to the new competition from synthetics.

Those in attendance from outside the Department of Agriculture included Harry Caldwell, producer, Greensboro, N. C.; Thomas Carstens, Carstens Packing Co., Tacoma, Wash.; Roy M. Cohen, Butcher's Advocate, New York City; Harry J. Douel, Jr., University of Southern California, Los Angeles; Wesley Hardenbergh, American Meat Institute, Chicago; Dr. L. P. Hubbuch, E. I. Dupont de Nemours Co., Philadelphia; E. E. Kurzynski, Kentucky Chemical Industries, Cincinnati, Ohio; Robert Peelle, producer, Sabina, Ohio; A. S. Richardson, Procter and Gamble, Ivorydale, Ohio; J. E. Wells, Jr., Farmers Union Cooperative Commission, So. St. Paul, Minn.; P. O. Wilson, National Livestock Producers' Association, Chicago.

- s b d -

Russia signed a one-year trade agreement with Manchuria, according to Wall Street Journal. It calls for the exchange of Manchurian soybeans, vegetable oils, maize and rice for Soviet industrial equipment, motor vehicles, oil products, textiles and medicines.

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1949 HARVEST IS EARLY

The soybean crop generally was maturing ahead of normal September 1. It appears that only a very small acreage can be hurt by frosts at normal date. Prospects are that harvest will be well under way in some areas by Sept. 15.

Growing conditions have been good over most of the bean belt. Drouth was showing up in spots in northern states.

Weed control is about normal, though complicated by heavy rains earlier in the season in the Mid-south. Disease damage apparently is no worse than other years. Heavy grasshopper populations are reported in some areas.

If producers can obtain support prices at harvest time apparently fewer beans will be stored than in 1948. Soybean Digest crop reports indicate.

Conditions on August 1 point to another 200-million-bushel soybean crop, reports U. S. Department of Agriculture crop reporting board. The 1949 crop is forecast at 202-386,000 bushels, the second largest of record being exceeded only by the 220,201,000 bushel crop of 1948.

The high indicated production this year comes as a result of a high yield—20.9 bushels per acre compared with the average of 18.7 bushels. The 1948 yield of 21.4 bushels per acre was the highest of record. The crop started under exceptionally favorable conditions this year especially in the heavy producing North Central states.

Reports of Soybean Digest correspondents follow:

ARKANSAS

L. M. Humphrey, R. L. Dortch Seed Farms, Scott, for Little Rock area (Aug. 22): Maturity about normal. Temperatures have been

SOYBEANS FOR BEANS*

State	Yield per acre		Production	
	1948	Indicated 1949	Average 1938-47	Indicated 1949
	Bushels		Thousand bushels	
Ohio	20.5	21.0	16,276	18,614
Ind.	21.5	21.5	20,686	31,196
Ill.	24.0	24.0	59,831	78,504
Mich.	17.5	17.5	1,464	1,138
Wis.	13.0	14.5	479	195
Minn.	18.5	18.0	4,452	15,614
Iowa	23.0	22.0	25,894	35,443
Mo.	20.0	19.0	6,534	15,900
Kans.	15.0	13.5	1,471	2,505
Va.	16.5	16.0	994	1,749
N. C.	13.5	14.0	2,305	3,564
Ky.	19.0	19.0	892	2,299
Tenn.	20.0	18.0	525	1,340
Miss.	18.0	14.5	998	2,394
Ark.	19.5	18.5	2,544	5,148
O. States	15.4	13.5	2,836	4,598
U. S.	21.4	20.9	148,381	220,201

*USDA crop reporting board Aug. 11.

very favorable and rainfall abundant. No excessively high temperatures and no dry spells. Yield outlook 15-20% above normal. Total yield 60% of 1948 due to reduced acreage. No significant disease damage and little insect injury. Almost all local crop will go to oil mills.

Jake Hartz, Jr., Jacob Hartz Seed Co., Inc., Stuttgart, for southeast, south central (Aug. 23): Growing conditions improved. 90% normal, 10% 1 week late. Cool temperatures. Yield above average. Total yield 10% less than 1948. Stands spotted. Weed control poor in some sections. Heavy showers June, July, August. Field trips have revealed presence corn ear worm and blister beetle. 20% of crop will be stored on farm, 10% in local elevators.

ILLINOIS

E. E. Eversole, Hindsboro, for Douglas and Coles Counties (Aug. 23): Maturity 10-20 days earlier than normal. Good rains this month. Yield outlook 15-20% more than normal. 20% fields weedy. Slight damage by grasshoppers. A very few fields have been sprayed by air-

plane. Local elevator adding two 40,000-bushel storage bins. 15% of crop will be stored on farms, 10% in local elevators. Recent price soybeans November delivery \$2.29.

J. E. Johnson, Champaign, for Champaign and adjoining counties (Aug. 22): Maturity will be 10 days in advance of 1947 and 1948 harvest. Weather and moisture conditions excellent. Looks like good average yield. Vegetative growth very heavy, podding a good average, not heavy. Would not expect yield average to be much higher than 1948. Weed control as good or better than average year. Brown stem rot showing in a few fields. Expect this to increase as season advances. Outlook for storage not serious. Farm storage should be less than 1948. Farmers have used storage space for oats. Local elevators will offer storage for those interested.

W. L. Burlison, head department of agronomy, University of Illinois, Urbana (Aug. 22): Maturity of crop better than normal. Weather conditions ideal. Looks like state will average about 21 bushels. Weeds are bad. No serious pests in central Illinois that I know of.

H. I. Cohn, Sr., Carrollton, for west central (Aug. 21): Maturity of crop about normal in Valley Farms experiment plots. Monroe will mature about Sept. 1. Koreans Sept. 5. Hawkeyes Sept. 10. Lincolns Sept. 15. Wabash Oct. 1. Weather and moisture conditions excellent. Yield will be high in some fields. Average looks like 25-30 bu. in this area. Weed control much better than in 1948. No major disease or pest losses in prospect. Storage somehow will be worked out. 20% will be stored on farm. Do not see how elevators can store any as they need space for corn.

Russell S. Davis, Clayton, for west central (Aug. 23): Crop well ad-

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vanced. Only a few fields late. Moisture conditions almost ideal. Two big showers in early August produced heavy foliage. Looks like bumper yield per acre. Acreage is down considerably. Some fields very weedy. Bulk of crop will go to elevators if price right.

Gilbert F. Smith, Mahomet, for east central (Aug. 24): Bean crop seems to be maturing as usual. Rains spotted in our county. Good rains at Champaign and 10 miles out no rain. Talk is that some yields will be good and some low. Some weeds showing. Few tenants have any storage. Owner operators will store theirs. 90% of Champaign County farms are tenant operated.

INDIANA

K. E. Beeson, secretary-treasurer, Indiana Corn Growers Association, Lafayette (Aug. 23): Maturity normal to 10 days early. Abundant moisture in much of central Indiana and fairly adequate supply elsewhere. Temperature conditions recently ideal for soybeans. Official forecast of 21.5 bu. per acre—same as 1943—seems conservative in view of splendid yield prospect for central Indiana. Weed control no more successful than usual. Weeds and fall growing grass difficult to control. Grasshopper damage slight to date, although grasshopper population in meadows is high. "Frog eye" showing on leaves in southern Indiana in considerable quantity; pod and stem blight here and there. Some brown stem rot and bud blight reported. Storage appears about the same problem as in 1943.

J. B. Edmondson, Danville, for south central (Aug. 27): Maturity of crop 10 days-2 weeks ahead of normal. Fully mature now for hay (full pods) unusual for last half August. Weather just about ideal all way through to date. Continued dry from now on would hurt later beans some. I would say yield 10-15% above normal, upland beans in particular. Ragweeds sticking their heads above beans. No serious trouble anticipated. Isolated plants killed by pod and stem blight but no serious damage from any source. Around 20% or less will be stored on farms, 5% or less stored in elevators for future sale.

Peter J. Lux, State PMA, Indianapolis, for central (Aug. 26): Maturity 15 days early. Weather very good. Yield outlook 5% above normal. 30% will be stored on farms.

Ersel Walley, Walley Agricultural Service, Fort Wayne, for northwest Ohio and northeast Indiana: 90% of crop normal maturity; 10% 10 days late. Some damage from dry weather. Yield per acre about normal. Guess total yield 10% less than 1943. Less weeds than ever before. Some damage from magnesium deficiency in heavy soils. 40% will be stored on farms, 20% in local elevators; 40% will be sold depending on price.

IOWA

Leslie M. Carl, U. S. Department of Agriculture, Des Moines (Aug. 24): Maturity about normal. Some improvement since the rains, although some areas very dry. About

21-22 bu. yield expected. 10-year average 19.5 bu. Weed control not very good. Grasshoppers caused some damage in local areas. About 60% of crop expected to be sold by Dec. 1. Rest of crop will be stored on farms, with about 20% moving in December and January.

O. N. LaFollette, Iowa Department of Agriculture, Des Moines (Aug. 22): Maturity of crop advanced. Moisture conditions varying from normal to dry. Yield outlook above normal. Total yield slightly less than 1943. Most fields cleaner than normal. Outlook for storage of 1949 crop not so good.

Fred Hawthorn, Castana, for western (Aug. 25): Maturity normal. A couple of dry spells but little drought damage. Our beans look exceptionally promising. Total yield 75% of 1943. Weed control better than average. Grasshopper damage reported in spots. Bins may be used to store corn which will cut down available soybean storage.

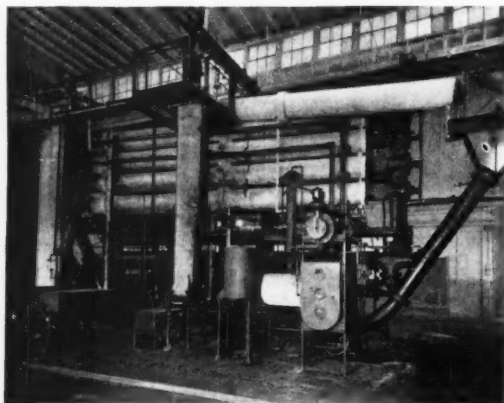
John Sand, Marcus, for northwest (Aug. 24): Maturity normal or if anything advanced. Weather conditions good. Yield outlook better than normal. Beans seem cleaner than normal season for cultivation was ideal. Outlook for storage of 1949 crop poor. Less than normal will be stored in local elevators due to corn storage.

KANSAS

H. L. Collins, agricultural statistician in charge, U. S. Department of Agriculture, Topeka (Aug. 24): Maturity somewhat ahead of normal though a few July-planted beans

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are late. Rainfall in soybean producing area generally adequate and timely. Some areas a little "pinched" for moisture in early August. Weeds troublesome in a few bottom fields but most fields clean. Grasshoppers and webworm a problem in some fields.

E. A. Cleavinger, extension service, Kansas State College, Manhattan, for eastern (Aug. 22): A normal season to date. Weather and moisture conditions good to excellent. Yield outlook 110-115% normal. Fields in general free of weeds. Grasshoppers doing considerable damage in certain communities. 50-60% of crop will be stored on farms; 30-40% in local elevators.

H. F. Bryant, agricultural statistician, Louisville: Maturity of crop okay, a bit late. Weather and moisture conditions drier and more favorable after wet early season. Yield outlook good. Excessive rains earlier were chief trouble.

LOUISIANA

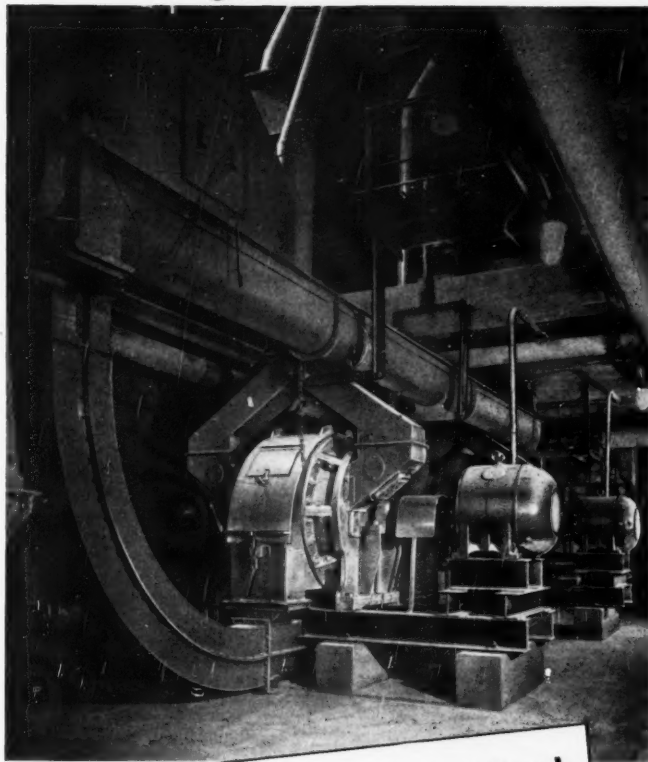
W. M. Scott, Tallulah, for northeast (Aug. 24): Maturity 10 days to 2 weeks later than normal due to late wet spring causing late planting. Moisture excessive all season for good clean cultivation, at least 10 or 15% abandoned. Where beans worked and given a chance yield outlook normal or better than last year. Yield will be 10% less than 1948 due to poor cultivation. 10 or 15% would be caught by earlier-than-normal frost. Weed control very poor. No added storage here, but a reduction of 20-25% in acreage will ease storage situation. Part of crop to be stored on farms depends entirely on price at harvest. If market is at loan figure or above farmers will sell.

MINNESOTA

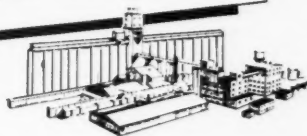
John W. Evans, Montevideo, for southwest central (Aug. 25): Maturity much advanced as compared with normal. Very dry for 3 weeks. Some areas have showers. Lower leaves falling off and plants becoming brown. June planted soybeans being discounted very much. Yield reduced. Outlook for storage of 1949 crop not much improved though lighter small grain crop may make it easier to store soybeans. Slight increase in farm storage. Flax competition in elevators.

R. E. Hodgson, Waseca, for southern (Aug. 22): Maturity of crop at least a week to 10 days ahead of normal due to drouth. Yield outlook normal though hard to esti-

THE PRATER *DUAL-SCREEN* PULVERIZER



Standard Equipment at Central Soya!



© A leader in the development of the solvent process of extraction, Central Soya

Co., has contributed much to the improvement of equipment used in the process. The design of the Prater Dual-Screen Pulverizer, for example, is based to a considerable extent upon the recommendations of people who **know** the solvent process.

As a result, the Prater Dual Screen Pulverizer is standard equipment at Central Soya's Solvent Extraction Plants at Cibson City, Illinois, Decatur, Indiana, and Marion, Ohio.

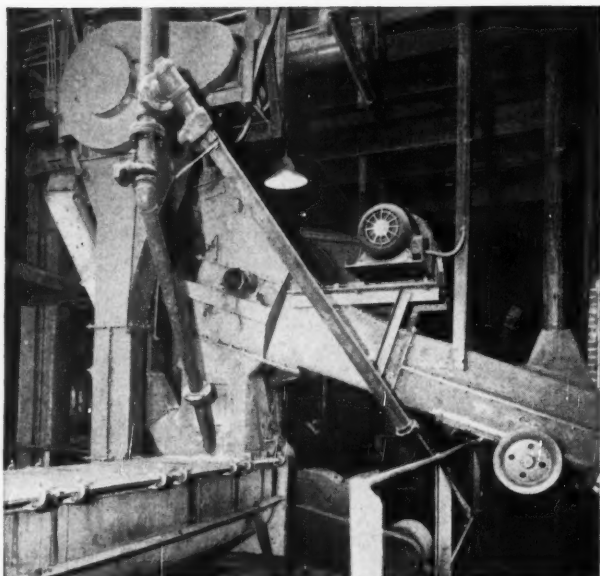
If you are working with this process, it will pay to standardize on the equipment that's built to do the job most efficiently and economically. Write: Prater Industrial Products, 1527 South 55th Court, Chicago 50, Illinois.

PRATER PULVERIZERS

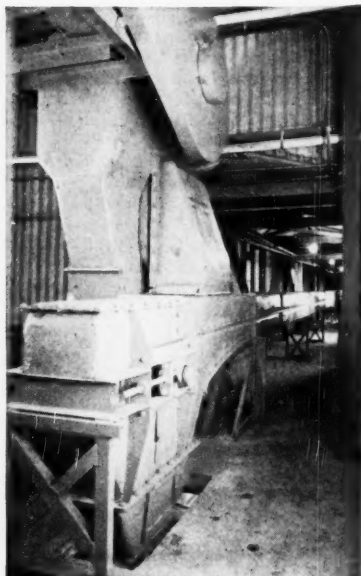
Conveyor Mechanization

by **LINK-BELT**

Illustrations from photographs taken in plant of McMillen Feed Mills, Division of Central Soya Company, Inc., at Gibson City, Illinois.

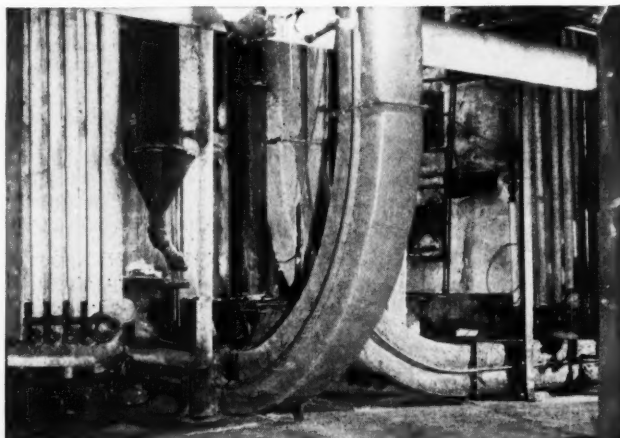


Three Link-Belt Bulk-Flo conveyors for spent flakes. Inclined conveyor and L-type side-discharge unit deliver to paddle type mixer and screw conveyor feeding toaster. L-type front discharge unit handles flakes from first toaster to second toaster.



L-type side discharge Bulk-Flo delivering raw bean flakes from basement to horizontal Bulk-Flo extending across bridge to French extractor in separate building.

Three Link-Belt Bulk-Flo L-type conveyors handling bean flakes. Front discharge unit at right extends from first to second French toaster. L-type unit in foreground extends from second toaster to dryers on upper floor. Smaller unit in rear delivers to screw conveyor feeding first toaster at third floor.



--the Pattern for Efficient Performance

Handling is a big job in the modern vegetable oil extraction plant; big enough to affect overall efficiency and profits. So, to assure that this important function is performed safely, positively, economically, more and more plants are turning to Link-Belt for engineering advice on the installation of conveying and power transmission machinery. The McMillen Feed Mills, Gibson City, Illinois is an excellent example of preparation equipment, conveyors and drives, skilfully coordinated into a smoothly working efficient system. Link-Belt Bulk-Flo conveyors, with their totally enclosed casings, provide compact, safe, positive handling of bean flakes in various stages of the process. Spent toasted flakes are efficiently cooled in a Link-Belt Multi-Louvre cooler, following the drying process.

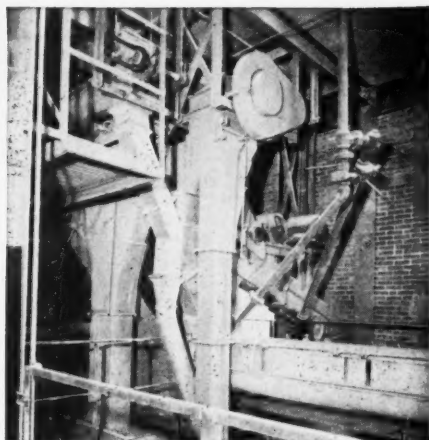
Link-Belt's experience with materials handling throughout the industries and with many different types of materials is assurance of a correct solution to your particular problems. With advanced types of conveying machinery and power transmission equipment to select from, Link-Belt engineers can supply exceptionally valuable service to the vegetable oil industry in recommending and supplying the correct type of equipment, laid out for most efficient performance.

LINK-BELT COMPANY

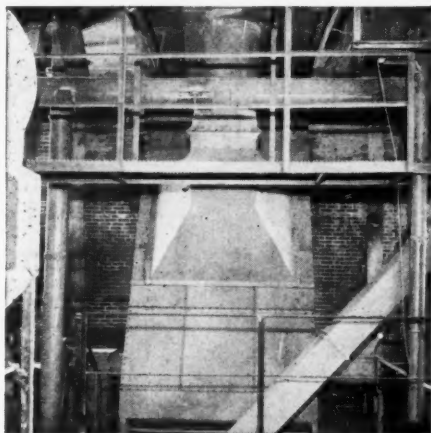
Chicago 8, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Houston 3,
Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8.
Offices in Principal Cities. 11,515

Types of Link-Belt Conveying Machinery

Belt Conveyors	Apron Conveyors
Screw Conveyors	Oscillating Conveyors
Bulk-Flo Conveyors	Flight Conveyors
Chain Conveyors	Bucket Elevators
Trolley Conveyors	Bucket Carriers



Three Bulk-Flo conveyors for spent flakes. Inclined conveyor and L-type side-discharge clean-up unit in foreground deliver to screw conveyor feeding toaster. L-type front-discharge unit at left handles flakes from toaster No. 1 to toaster No. 2.



Link-Belt Multi-Louvre cooler for spent toasted bean flakes.

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"THE COMPLETE LINE"

mate possible drouth damage. Severe in places. Total yield 5% above 1943. Even Lincoln should get ripe before frost. Weed control about normal. Some fields look better than usual. Grasshoppers doing some damage to leaves.

MISSOURI

Edward Tillman, Missouri Soybean Co., Caruthersville, for southeast (Aug. 22): Maturity of crop about normal. Moisture conditions very good. Yield should be one of the best we have had. Some weeds showing. Some reports of beetle damage. A good many farm storage bins are being sold but of course not nearly enough. 5% at the most will be stored on farms. If market declines to a figure too much below the loan about 10% may be stored in elevators.

Harry Plattner, Malta Bend, for central (Aug. 22): Maturity of crop normal for early planting. Moisture conditions good. Yield outlook about same as 1943 or a little better. Weed control good on row planting.

E. M. Poirot, Golden City, for southwest (Aug. 22): Maturity of crop a little earlier than normal. Weather and moisture conditions

good to excellent. Yield outlook higher than normal. Yield up 10% from 1943. Weed control excellent.

J. Ross Fleetwood, extension specialist in field crops, Columbia (Aug. 24): Maturity about normal but quite a number of very late fields due to excessive rains. Weather and moisture conditions almost perfect. Near record yield expected. Some fields very weedy but majority excellent.

Heartsill Banks, Wardell, for extreme southeast (Aug. 23): Maturity of crop 100%. Too much rain for cotton, but beans look wonderful. It may be possible that bean crop will run to stalk rather than beans but as of now they seem all right. Yield outlook 110% of normal, 100% of 1943. Some leaf beetles, but we always have 'em. Outlook for storage of 1949 crop critical.

John E. Brown, Cypress Land Farms, Jaywee, for New Madrid County (Aug. 24): Maturity of crop same as last year. Moisture conditions extra good but making plants very rank. Yield outlook 30-50% above average as early beans are as good as last year but late crop (after lost cotton) will bring average down.

10-15% would be caught by earlier-than-normal frost.

NEBRASKA

Donald G. Hanway, assistant agronomist, University of Nebraska, Lincoln, for central and eastern (Aug. 25): Maturity of crop normal with exception of few late planted fields in central. Yield outlook will average above normal. Total yield one-fourth to one-third less due to smaller planted acreage. Few fields show serious weed problem.

Fremont Cake & Meal Co., Fremont, for east (Aug. 22): Crop about normal maturity. Weather ideal with ample moisture. Yield outlook above normal. Beans are clean. Outlook for storage of 1949 crop not good. Part stored on farms depends on amount of corn shelled and returned on farms.

NEW JERSEY

John E. Baylor, assistant extension specialist in farm crops, State College of Agriculture, New Brunswick (Aug. 23): Maturity about normal. Adequate moisture for late planted beans. Weather generally good. Prospect for slight average decrease in yield.

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NORTH CAROLINA

Earl Finch, agricultural statistician, Raleigh (Aug. 15): Conditions as of Aug. 1 point to a soybean crop for beans 5% above 1948 and 50% above the 1938-47 average. Current estimates point to one of largest soybean crops of record. This can be explained by gradual shift in acreage (toward beans for beans) that has been taking place.

OHIO

D. F. Beard, agronomy department, Ohio State University, Columbus (Aug. 22): Maturity normal. Dry weather in spots hurt crop some. Yield outlook good, above normal. Some excellent fields all over state. Weed situation about normal. Diseases or pests not serious yet.

PENNSYLVANIA

E. L. Gasteiger, agricultural statistician, Harrisburg (Aug. 22): Maturity 1 week-10 days early. Adequate moisture except in north central counties where rainfall very deficient. Yield outlook average.

TENNESSEE

Peter Frederickson, Tiptonville, for west Tennessee and southwest Kentucky (Aug. 22): Maturity of crop 5-10 days earlier than normal. Crop in this territory looks good. We have had ample moisture all season. Total yield 15% less than 1948, due to acreage.

WEST VIRGINIA

R. J. Friant, extension agronomist, Morgantown (Aug. 22): Good growing weather, moisture ample. Yield outlook as good as or better than normal. Total yield about equal to 1948. Weed control fair.

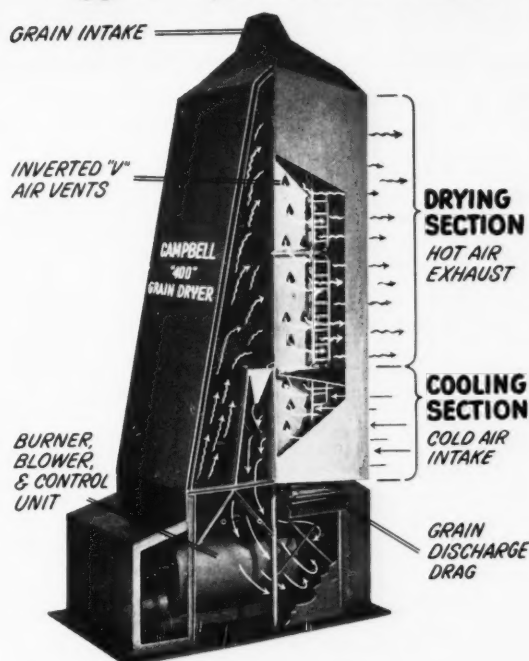
WISCONSIN

Geo. Briggs, Agricultural College, Madison (Aug. 21): Maturity average. Dry weather in June but very favorable weather since makes exceptional growth. Yield outlook better than normal. Storage no problem.

ONTARIO

Robert H. Peck, River Canard, for southwest (Aug. 24): Maturity about 10 days ahead of normal. To date both weather and moisture conditions good. Yield outlook about 15% better than average. Possibly 35% more beans than 1948. Very few fields suffering much damage from weeds. Very little disease and no pests. Possibly 25% will be stored on farms. Very little in local elevators though this may be changed after local marketing board sets price. Some local dealers have been contracting beans at \$2 per bu.

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Publications

Soybeans in Kentucky

Only a small part of Kentucky is level enough to grow soybeans to advantage. Growing soybeans for harvest as beans is largely confined to several counties in the western part of the state that have a large acreage of bottomland, much of it subject to overflow.

Henderson, Daviess and McLean counties produce about half the total soybean seed crop of the state.

Soybeans for hay are most extensively grown in the eastern or mountain part of Kentucky. A small acreage, alone or in combination with other crops, chiefly corn, is grown in practically every county in the state.

Patoka and Gibson are perhaps the best of the medium late varieties for Kentucky. Ogden, a later variety, is increasingly popular in some counties of southwestern Kentucky.

Lincoln as a medium early variety has great promise in Kentucky if it will yield as well on the average as the later varieties.

SOYBEAN PRODUCTION IN KENTUCKY, by E. J. Kinney. Circular 466. Agricultural extension division, College of Agriculture and Home Economics, University of Kentucky, Lexington, Ky.

In Oklahoma

The two leading soybean varieties among those tested in Oklahoma the past 6 years are Ogden and S-100. During the 6 years at Stillwater, Ogden averaged 16.6 bushels per acre, and S-100 has averaged 17.42.

But at other locations Ogden averaged higher than S-100 in yield.

Soybeans are adapted in Oklahoma east of the 35-inch rainfall belt, or roughly the eastern half of the state. It is emphasized that in order to be profitable they should be planted on land that will make a fair field of corn.

Best dates of planting in Oklahoma lie between May 10 and June 10, tests indicate.

SOYBEAN VARIETY TESTS 1943. Mimeographed Circular M-179. By Chester L. Canode, assistant agronomist, Oklahoma Agricultural Experiment station, Stillwater, Okla.

Bread Troubles

Until the war French bread had an enviable reputation but its quality has deteriorated greatly since, due to the extreme shortage of wheat. It has been necessary to use substitutes and extenders in considerable quantity.

Now a booklet has been published that tells of the many problems of French bakers during and since the war. The booklet describes in detail the results obtained from the use of various ingredients that have been unfamiliar to French bakers and the public. These include soy products.

LES SUCCEDANES IN PANIFICATION (Substitutes in Breadmaking), by H. Nuret and R. Calvel. 115 pages. Published by the Association of Former Students of the French School of Milling, 16 rue Nicolas Fortin, Paris, France.

Fertilizers

The best way to fertilize soybeans is to increase the rates of fertilizer applied to the responsive crops in the rotation, results at the Ohio Agriculture Experiment Station indicate.

It is useless to fertilize soybeans on acid soils. It is much more profitable to spend the money for limestone.

Soybeans do best on fertile soils that are the result of a longtime soil improvement program involving adequate green manure crops of heavily fertilized and limed meadows, and other practices that maintain or increase soil productivity levels.

SOYBEANS PREFER SOILS OF HIGH FERTILITY. By C. E. Evans, Ohio Farm and Home Research, March-April 1949.

Soybeans and Goitre

The slight goitrogenic property of soybeans is not of practical importance in animal nutrition, since small amounts of iodine can effectively prevent the resulting thyroid enlargement, say Wisconsin workers. For this reason no harmful effects should result from the use of soybeans in practical rations.

They have studied the effect of iodine supplements to various types of soybean-containing rations when fed to rats.

RELATION OF IODINE TO THE GOITROGENIC PROPERTIES OF SOYBEANS. By A. W. Halverson, Marie Zeppline and E. B. Hart, Department of Biochemistry, College of Agriculture, University of Wisconsin, Madison. Journal of Nutrition, July 10, 1949.

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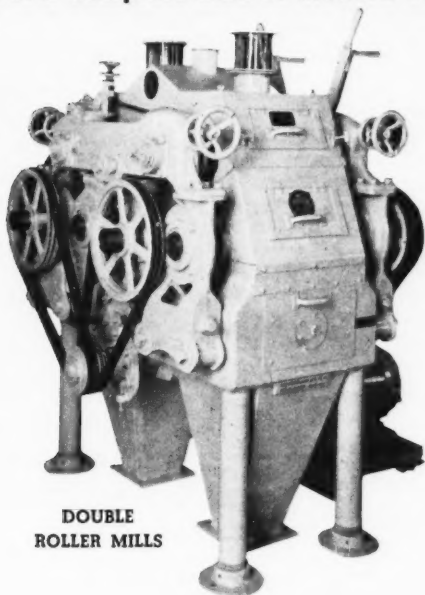
Front at Beale, Memphis, Tenn.

DEALERS IN MILL-MACHINERY AND ELECTRICAL SUPPLIES

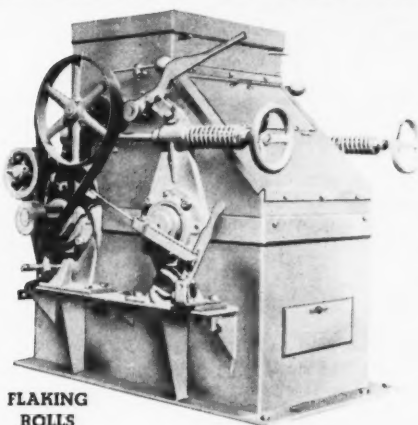
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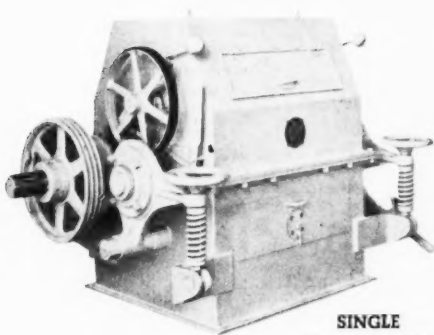
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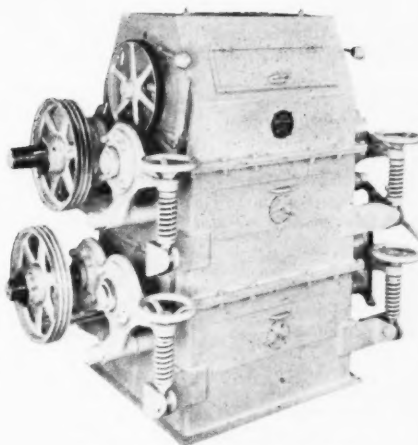
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GRITS and FLAKES...

FROM THE WORLD OF SOY

The W. A. Gemeinhardt Seed Co., Matthews, Mo., is erecting two 14,500-bushel storage bins to handle the fall soybean crop. A Howe truck scale with 45-ft. deck is being installed. A dump is being added so that corn and soybeans can be handled at the same time.

Loring K. Macy has been named assistant director of the Office of International Trade of the U. S. Department of Commerce. He has served as chief of the foods branch of the Office since 1945.

Shellabarger Mills, Inc., Pana, Ill., is adding 100,000 bushels more storage capacity for the harvest this fall, bringing its total capacity to 750,000 bushels. The firm is also installing a 45-foot combination Kewanee truck hoist and scales.

L. R. Good & Son, Bloomdale, Ohio, has added two 6,000-bushel concrete slab tanks to its elevator for soybean storage.

Decatur Soy Products Co., Decatur, Ill., is constructing a new processing building to replace the old one and is installing three more Anderson Expellers, making a total of nine expellers. These changes and improvements will increase the daily capacity from 38,000 bushels to 65,000.

Dr. William Albrecht, head of the department of soils, University of Missouri, is studying the soil in Australia under the auspices of that government, the National Research Council and the Carnegie Corporation of New York. Dr. Albrecht is well known in the soybean industry. He will return to the U. S. the latter part of September.

The Seedburo Equipment Co. of Chicago is now handling a new flexible grain spout liner made of enameling iron finished in porcelain enamel. This spouting has been manufactured and tested by the Erie Enameling Co., Erie, Pa.

Deshler Farmers Elevator Co., Custar, Ohio, hopes to have its new 140,000-bushel concrete elevator finished before soybean harvest this fall.

A new field shredder of the hammermill type has been announced by Original Enderes Co., Guttenberg, Iowa. The cutter may be used on corn stalks, cotton stalks, weeds and vines to kill insects and disease as well as to provide a mulch.

A merger of the Soy Extraction Corp. and the Continental Grain Co., both of Columbus, Ohio, has been announced by company officials. The processing operations will be carried on under the name "soy extraction division" of the Continental Grain Co.

PHILLIPS APPOINTS



L. H. WRIGHT

The appointment of L. H. Wright as manager of the fertilizer sales division of Phillips Chemical Co., Bartlesville, Okla., has been announced by K. S. Adams, president of Phillips Petroleum Co. and its chemical subsidiary. Wright started work with the Phillips company in 1930.

Adams announced the following other appointments in the fertilizer sales division. R. D. Evans, manager of the Houston district; A. Wayne Peck, sales representative; Clarence J. Ball, manager of Norfolk, Va., district; Harold R. Krueger, director of technical service; Kasper Peter, manager of the Chicago district.

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PURINA
CHOWS

BUY THE FEEDS THAT USE THE SOYBEAN

Buy Purina Chows

E. C. Arnn, has opened his own brokerage firm at 1015 Falls Building, Memphis, Tenn., and will deal in soybeans and cottonseed products. Arnn has been traffic manager and manager of sales for Perkins Oil Mill, Memphis, for 18 years. Harry Tobias, formerly of Humphrey-Godwin Co., Memphis, for 13 years succeeds Arnn at the Perkins Oil Mill.

Henry H. Allen, vice president and director of Bemis Bro. Bag Co., St. Louis, Mo., recently celebrated his 60th year with Bemis. He is now in charge of eastern operations of the firm, but from 1903 until 1920 he served in various capacities in the Kansas City and St. Louis areas.

Otto Wilke, St. Charles, Mo., is building a new 30,000-bushel elevator at Blaze Siding.

R. K. Speairs has been appointed associate professor of botany and forestry at Centenary College, Shreveport, La. He had been serving as an agent of the bureau of plant industry engaged in the study of diseases of soybeans grown in Louisiana at Louisiana State University, Baton Rouge. Speairs hopes to be of assistance to growers interested in adding soybeans to their crop plans in the Shreveport area.

A newly designed grain bin of all-metal construction, the Perfection, is announced by Black, Sivalls and Bryson, Inc., Kansas City, Mo. The bins range in size from 1100 bushels to 2500 bushels capacity. Information may be obtained by writing Black, Sivalls and Bryson, Inc., 720 Delaware, Kansas City 6, Mo.

At a recent ceremony, Chase Bag Co.'s, Reidsville, N. C., branch employees were honored for having accomplished 500,000 continuous working hours without an accident. F. H. Ludington, Chase president, presented each employee with a pin from the National Safety Council.

An article on "Potential of Processing Soya Beans by Hydraulic Method" by Roy Castilow of the Southern Cotton Oil Co., Little Rock, Ark., appeared in the July, 1949 issue of Oil Mill Gazetteer.

Now Pay Way Feed Mills, Inc., Kansas City, Mo., has added a new lure to its products by packaging them in print cloth sacks with a zipper built into each sack for use in making wearing apparel.

Cerro Gordo Co-op Grain Co., Cerro Gordo, Ill., has purchased the 35,000 bushel Harry Cox Elevator at Cerro Gordo and will take possession about September 25.

BACK FROM EUROPE

Dwayne Andreas and Dr. Julius Hendel recently returned from Europe after taking part in the International Association of Seed Crushers Conference at Montraux, Switzerland.

Both men are vice presidents of Cargill, Inc., Minneapolis, Minn.

The conference was attended by leading oilseed processors from all



DWAYNE ANDREAS

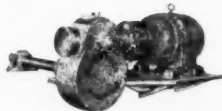
over the world, to discuss world problems in oils and oilseeds.

Andreas and Hendel also traveled in Germany, France, Denmark, Holland and Belgium conferring with Cargill agents and customers in the vegetable oil and oilseed business. They spent some time studying the German situation in Hamburg and Frankfurt and were amazed to see the rapid progress being made under the impetus provided by tremendous American expenditures and the apparent determination of some Americans to rebuild Germany as soon as possible.

14 You will meet good friends at BOOTH 14 14 ASA CONVENTION— Minneapolis, Sept. 6-7-8 14

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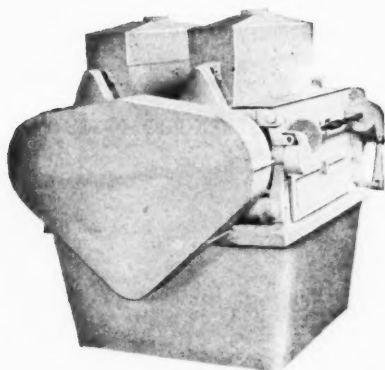
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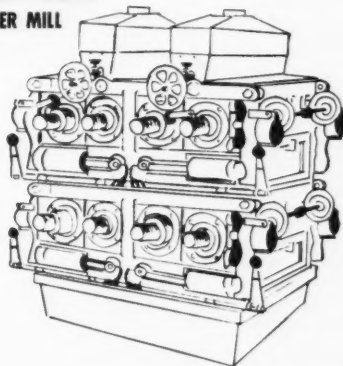
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4. Your production goes up, while operating and maintenance costs go down.

**WOLF "TRILITE"
2-HIGH DOUBLE
ROLLER MILL**



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CHAMBERSBURG • PENNSYLVANIA

Wolf Products Improve Sanitation

Four new storage silos are under construction for the soybean processing plant of the Farmers Cooperative Elevator at Martelle, Iowa. They will give the plant an additional 75,000 to 80,000 bushels storage capacity.

Cuppy & Wyeth at Humboldt, Ill., are adding 34,000 bushels to their grain storage capacity by construction of two metal tanks. Tanks are made by Butler Manufacturing Co., Kansas City, Mo.

York & Primmer, Lodge, Ill., have leased the 20,000-bushel Caldwell Elevator from Miss L. M. Caldwell to be used for soybean storage.

Construction features of Allis-Chalmers Type S, single stage, double suction pump may be obtained by writing for bulletin O8B6146A, Allis-Chalmers Manufacturing Co., 1159 S. 70th St., Milwaukee, Wis.

Adolph Mayer, 70-year-old manager of Fulton Bag & Cotton Mills' Dallas, plant, died recently after an illness of several months. Geo. W. Williams succeeds Mayer as manager of the Texas plant.

Sprout, Waldron & Co., Inc. has announced a two-color bulletin describing a complete line of equipment as supplied to the flour, feed and allied industries. Write for bulletin No. 45-B, Sprout, Waldron & Co., Inc., 105 Sherman St., Muncy, Pa.

H. D. Jones has been appointed manager of the Deshler Farmers Elevator Association, Deshler, Ohio, replacing Don Arns who has purchased the Milford Grain & Milling Co., Milford, Ind.

Monroeville Equity Exchange, Monroeville, Ind., has completed its new 60,000-bushel all-concrete elevator.

J. F. Fitzsimmons has been named manager of Allis-Chalmers commercial research department, Milwaukee, Wis., to replace J. R. Reed who has resigned to establish his own business.

The newly created process engineering department of Detrex Corporation, Detroit, Mich., will be headed by George W. Pew.

Bruce A. Norris, vice president of Norris Grain Co., Chicago, has recently been appointed to membership in the Chicago Board of Trade.

General Mills, Inc., Minneapolis, Minn., has just issued a brochure with report in pictures and tables on the year June 1, 1948 to May 31, 1949.

CHANGE FOR IFTNER



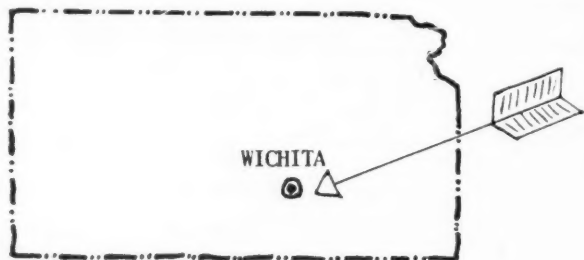
Geo. H. Iftner (above), director of grain marketing for the Illinois Agricultural Association for the past 8 years, has been named assistant to Manager Sam Hassell of the Illinois Grain Terminals Co., Chicago. Iftner laid much of the groundwork that resulted in the organization of Illinois Grain Terminals.

DETREX PROMOTES



R. A. EMMETT, JR. J. D. HAMACHER

These men were recently promoted by Detrex Corp., Detroit, Mich. R. A. Emmett, Jr., has been made a special assistant to the general manager to supervise material control, production scheduling, inspection, and safety. J. Doyle Hamacher has been made superintendent of the equipment manufacturing plant.



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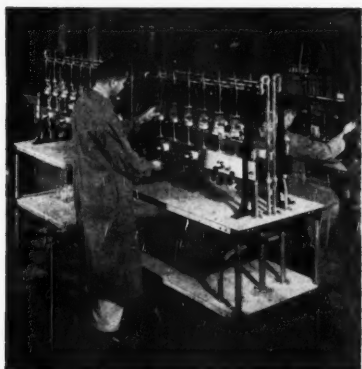
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"Labconco" Kjeldahl units for protein determinations are available in all sizes and models from 6 to 96-flask capacity, gas or electric heat.



"Goldfisch" fat extraction apparatus is available in 2, 4 and 6 capacity units, complete with all glassware and ready to operate.



Efficient "Labconco" fiber condensers minimize frothing, respond instantly to heat regulation, have no troublesome rubber hose connections.

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Kjeldahl Apparatus, "Goldfisch" Extraction Apparatus, Crude Fiber Condensers, Special-Purpose Carts, Laboratory Accessories.

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Kansas City, Missouri

SEPTEMBER, 1949

111

"Soybeans Immigrant of China," is an article by Stephen Warnock which appeared in the March, 1949 issue of *Purdue Agriculturist*.

Dixie Machinery Mfg. Co. has issued a bulletin featuring the new Dixie batch mixer. Bulletin is available on request, Dixie Machinery Mfg. Co., feed mill division, 4109 Goodfellow Ave., St. Louis 20, Mo.

Progress in sesame research in the United States and foreign countries was reported at the sesame conference in Clemson, S. C., where world leaders had a part on the program. This conference held at Clemson Agricultural College, Clemson, S. C., was the first international sesame conference sponsored by the South Carolina Experiment Station.

A story about the North Iowa Co-op Processing Association plant at Manly, Iowa, appeared in the Mason City Globe-Gazette, Mason City, Iowa, recently. There are also several pictures.

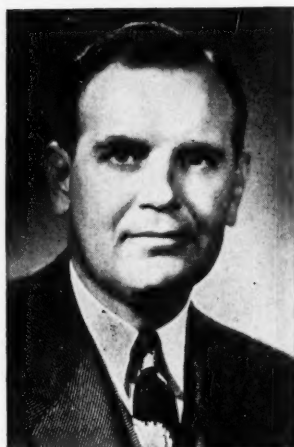
Dr. D. H. Wheeler has been named director of technical sales and service of the Chemical Division of General Mills, Inc. He will also spend considerable time in the field calling on trade.

Erie Manufacturing Co., Erie, Pa., has announced a redesign of the complete line of non-electric "Standard" and "Jumbo" plate magnets resulting in a 50 percent increase in magnetic strength and a 30 percent decrease in weight.

A "Stockholder's Meeting of the Air" was broadcast September 13 over WCCO, Minneapolis. Pillsbury Mills, Minneapolis, for the first time in radio and business history, opened its annual meeting to the public by radio.

John D. Black, professor of agricultural economics at Harvard University since 1927, has been appointed to serve on the 11-man agricultural research policy committee under the Research and Marketing Act, the U. S. Department of Agriculture announced recently.

TO NEW TERRITORY



CLYDE W. THOMPSON

Clyde W. Thompson has been appointed manager of the Wisconsin and Illinois sales district of McMillen Feed Mills, division of Central Soya Co., Inc., W. A. Seaman, sales manager of the northern division, has announced. Thompson has been associated with McMillen Feed Mills since 1939, and until the appointment was territory manager of the sales district of northeastern Indiana. He will locate his residence in Gibson City, Ill., with office at the firm's plant office there.

The Pioneers of Soybeans IN THE SOUTH



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These Southern Grown Green and Yellow Varieties Are Excellent for Edible Purposes.

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OF A BETTER, EASIER CROP THIS SEASON— *And Every Season!*

MM Modern Machines, Visionlined Tractors, and Power Units are *seasoned performers* in handling soy beans and all other crops... reducing your labor, increasing your profits, providing dependable, economical service from season to season, year after year! Quality MM farm implements assure better, faster, and more thorough work regardless of the task at hand. For all-round dependability, all through the year, MM is the choice of progressive farmers wherever the soil is tilled in the modern manner.

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MM POWER-FLOW SELF-PROPELLED HARVESTER, A MONEY MAKER IN SOY BEANS.



MM PLANTERS PUT YOUR SOY BEANS AND OTHER CROPS IN EVENLY, ACCURATELY AND AT UNIFORM DEPTH.



MM CULTIVATORS ON MM VISIONLINED TRACTORS KEEP SOY BEAN FIELDS CLEAN FOR MAXIMUM PRODUCTION.

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Gets More Work Done Every Hour

MM's new hydraulic control mechanism raises or lowers farm implements automatically, permits pre-selecting or changing tool depth or height of cut, utilizes tested safety features for both operator and machines and frees operator's hands and feet for greater safety. Control lever is easy to reach, simple to use. Uni-Matic Power reduces fatigue, labor, and drudgery.

Optional on MM's R, Z, U, and G Visionlined Tractors.



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WASHINGTON Digest

PRICE BILL. The Senate agriculture committee is so badly split on what should go into a new farm price support bill it will be lucky to get any legislation at all through this year.

Disagreements are so sharp that the Senate may wind up doing what the House did in July—adopt a 1-year extension of the present price support system, and postpone a decision until next year.

Senator Anderson of New Mexico is still fighting for his compromise bill, and thinks he will be able to muster enough strength to push it through.

Brannan is a high price support man. Regardless of what new legislation is adopted, soybean growers have reason to anticipate that Brannan will put the soybean support at close to its present 90 percent of parity level, if the funds are available and this isn't prohibited.

Under the Aiken Act, now on the books, soybeans can be supported at from zero to 90 percent of parity.

A 1-year extension of present supports would put the soybean floor within a range of 60 to 90 percent of parity.

The Anderson bill would give soybeans, for all practical purposes, a support of 75 to 90 percent of par-

ity, with the rate determined by a sliding scale formula.

Under the proposed formula, a 90 percent of parity floor would be set for soybeans when the supply was no more than 2 percent above normal; a 75 percent rate when the supply was over 30 percent above normal.

The total supply is defined as estimated production for the year concerned, carryover, including the seed equivalent of processed soybeans if the Secretary of Agriculture desires, and estimated imports.

Normal supply is defined as estimated domestic consumption, estimated exports, and a five-year average carryover.

BREAD BILL. Senators Gillette of Iowa and Young of North Dakota have introduced a bill, S. 2432, to require that all breads contain not less than 4 percent natural fat.

Gillette is chairman and Young is a member of the Senate agriculture subcommittee which has been holding hearings on surplus farm crops.

The bill has been referred to the Senate committee on interstate and foreign commerce.

The decision to introduce the bill came as a result of testimony before the subcommittee which charged

By **PORTER M. HEDGE**

Washington Correspondent for
The Soybean Digest

ed that lard and vegetable oils are facing a serious threat from the use of chemical emulsifiers.

A speech by George L. Prichard, director of PMA's fats and oils branch, was put into the record, in which he said:

"The baking industry's consumption amounts to about 40 percent of the lard and shortening production. It is estimated that if these softeners come into widespread use in the baking industry, 600 to 700 million pounds of shortening, lard, butter and oils would be eliminated from the baking industry's annual consumption of fat.

"This is equivalent to the production of soybeans from approximately 3,500,000 acres."

The bill was introduced to bring the question to the attention of "the proper committee of the Senate to look into the matter in greater detail."

Senator Gillette asks immediate action on the part of USDA to determine to what extent the use of farm products is being reduced by technological developments of this nature and their effects upon the nutritive value of food.

NEW ADMINISTRATOR.

There was no question in Washington but what the Agricultural Research and Marketing Act would be left in competent hands when E. A. Meyer, its first administrator, resigned in late July.

Philip V. Cardon was tagged by Secretary of Agriculture Brannan to take over the job. Dr. Cardon isn't exactly what you would call a greenhorn in the research field.

He was at the time of his appointment—and still is—head of USDA's Agricultural Research Administration. This is the largest civilian research organization in the world.

Work of the Research and Marketing Administration was already

AERO Cyanamid

SPECIAL GRADE

Removes Leaves for Early Harvest

When the soybean crop is made profits are increased by applying AERO Cyanamid.

AERO Cyanamid removes leaves so that beans dry rapidly to allow easy, efficient combining at an earlier-than-usual date.

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P. V. CARDON

O. W. HERRMANN

pretty well dove-tailed into that of ARA during its first two learning-to-walk years of operation. The appointment of Dr. Cardon makes the fusion of research activities more complete.

Dr. Cardon brings to his latest assignment a background of 40 years' experience in agricultural research, a thorough knowledge of farm problems, experience as an administrator, and experience in dealing with Congress.

Dr. Cardon's early training was in the West and South, working mainly with USDA, state colleges and state experiment stations. He returned to USDA in 1935 as head of the forage crops division of the Bureau of Plant Industry.

Dr. Cardon was a member of the committee which surveyed the United States on problems related to the industrial use of farm products prior to establishment of the four regional research laboratories, of which the Peoria lab is one.

He also had a part in establishing the soybean laboratory at Urbana, Ill., the salinity laboratory at Riverside, Cal., and the pasture laboratory at State College, Pa.

Dr. Cardon is a strong believer in the "multiple factor" approach to research problems. That is, bringing all the fields of science to bear on a problem, and all of the research organizations available.

This approach of organizing the full force of science on a particular research project has brought spectacular results in boosting corn yields in the Southeast.

Dr. Cardon's assistant, Omer W. Herrmann, is no stranger to the soybean industry. For the last 2 years he has been associated with development of the Research and Marketing program, and prior to that was director of PMA's fats and oils branch.

PRICE ANNOUNCED. Soybean price support levels somewhat below last year's have been announced by the Agriculture Department.

The basic support prices for the 1949 crop:

Green and yellow soybeans, \$2.11, compared with \$2.18 last year.

Black, brown and mixed soybeans, \$1.91, compared with \$1.98.

The soybean prices apply to beans grading United States No. 2 and containing not more than 14 percent moisture. Premiums and discounts will apply to other grades.

The soybean price prop is based on 90 percent of the comparable price for all soybeans on Sept. 1.

ACREAGE CONTROL

There is a possibility that acreage allotments might be used for soybeans next year.

This isn't final. A decision won't be made until the crop is made, and the total fats and oils situation is balanced up.

Flax acreage allotments are being planned for next year. With another big crop coming on top of a record carryover, they are considered essential.

Allotments will be coming back next year for corn, wheat, and cotton, in addition to those which have already been reestablished.

With allotments next year on both corn and cotton, some officials scarcely see how they can avoid some kind of acreage control on soybeans.

MARGARINE. As long as the Senate remains in session there is hope—for Senate action on the margarine tax repeal bill. It has been passed by the House and reported out by the Senate agriculture committee.

Senator Lucas, the majority leader, says he intends to bring the bill to a vote before the session ends. The Democratic policy committee of the Senate has put the bill on its list of "must" legislation.

A real scrap between margarine and dairy interests is anticipated when the bill reaches the floor, for Senators will be making a record for next year's campaign.

The consensus among leaders is that the bill will pass after a sharp debate, if it is brought to the floor for a vote.

Market Street

We invite the readers of **THE SOYBEAN DIGEST** to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here.

Rate: 5c per word per issue.
Minimum insertion \$1.00.

FOR SALE—Anderson Expellers, French Screw Presses all models, as is or rebuilt for specific materials. Pittock & Associates, Moylan, Penna.

AVAILABLE—Well informed, intelligent, young man with business education and experience, farm background, 35 years old, desires employment in agricultural commodity field. Prefers Chicago. Write Box 319C, Soybean Digest, Hudson, Iowa.

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VEGETABLE OILS AND MEALS
BROKERS

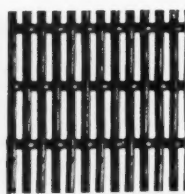
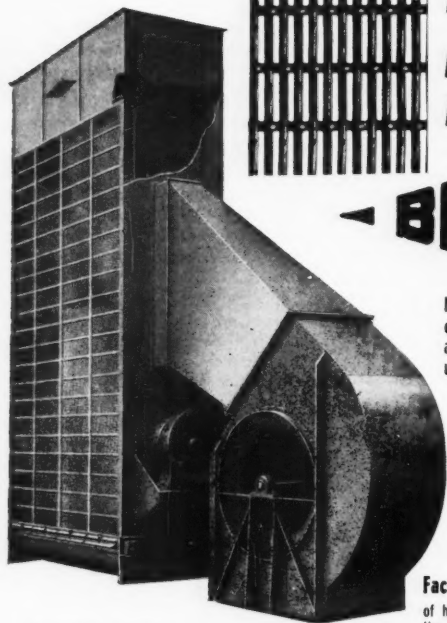


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- BERICO - Grain Driers

Made of high carbon steel, it allows each and every bean to be thoroughly and completely exposed to air blast from time beans enter drier column until they are discharged. Because tremendous quantities of low temperature air can be used, capacity is increased, drying is uniform, and bean quality is actually improved.

Models for outdoor or indoor installation . . . and for use with Oil, Natural Gas, Butane or Propane. Drying and cooling follow in one continuous, simple operation.



Factory Prefabricated
of heavy, all-steel construction. Assembly and installation rapid and easy. Send for FREE Data Sheets today—no obligation at any time.

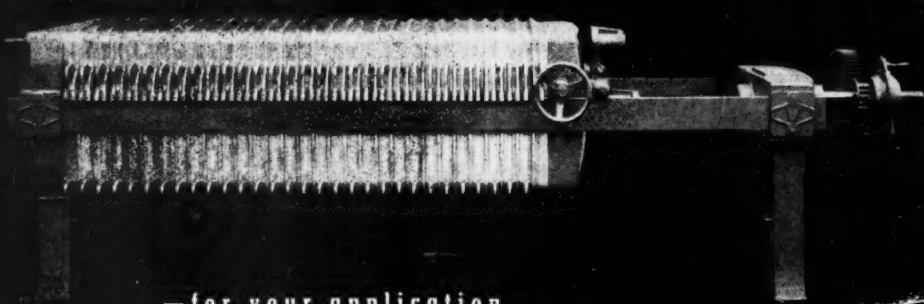
Approximate capacities:
MODEL 101-C
100-175 bu. per hr.
MODEL 201-C
200-350 bu. per hr.

MODEL 301-C
300-525 bu. per hr.
MODEL 401-C
375-700 bu. per hr.

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Valley offers a filter press in the size best suited to your application . . . in materials you find most practical for your requirements. Plates and frames or recessed plates

of aluminum alloy, cast iron, wood, bronze or stainless steel . . . Sizes: 6x6"; 12x12"; 18x18"; 24x24"; 30x30"; 36x36"; 42x42". Send For Free Catalog No. 202.



In The MARKETS

MEAL HITS YEAR'S HIGH

All markets moved to higher levels the first 3 weeks in August, continuing the upward trend begun in late spring and early summer. But a reaction set in Aug. 22 and most of the gains for the month were erased the following week.

Cash soybean oil meal found the highest spot for the year in the face of a generally declining feedstuffs market; and crude soybean oil worked up to the highest point since January.

Reasons given for the strength in markets the fore part of August:

1—A favorable livestock feeding ratio which created a demand for mixed feeds. (Mixers were said to be substituting cottonseed meal where possible when the market was highest).

2—The government's earlier-announced support of cottonseed, and USDA's estimate of a smaller 1949 cotton crop than had been expected.

3—A firm price structure for all fats and oils.

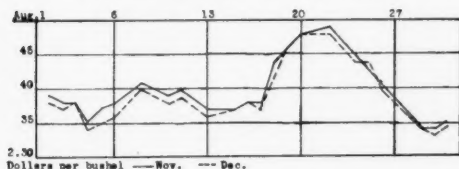
4—But the big factor was the fact that processors ran out of beans. The reported farm stocks just didn't show and higher prices failed to bring them out of hiding.

As a result there was a hectic scramble for the available supplies of old crop soybeans, and supplies of both meal and oil were extremely tight most of the month. There was also a prevailing belief that there will be a good demand for new crop soybeans when they come to market.

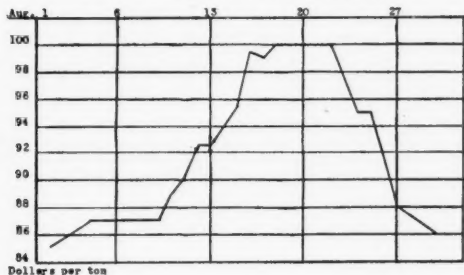
By the last week in August demand had thinned and offerings were more available. It was also becoming apparent that the movement of new crop soybeans will begin earlier than usual. Men in the trade were guessing that prices are high enough so there will be a heavy sale direct from the combine.

November No. 2 soybeans opened for the month on

FUTURES CHICAGO NO. 2 SOYBEANS



BULK SOYBEAN OIL MEAL, DECATUR



Processors of

"SU-SOY" and "SIOUX BRAND"

41% Old Fashion Soybean Oil Meal

SIOUX SOYA MILLS

Sioux City, Iowa

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RIDING ON A MERRY-GO-ROUND DOESN'T GET YOU ANY PLACE

You can keep grain off the "Merry-Go-Round" by equipping your elevator legs with the

CALUMET SUPER CAPACITY ELEVATOR CUP

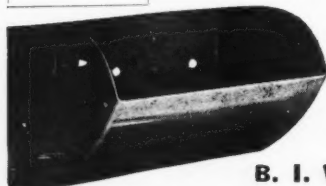
BIWELCO METAL PRODUCTS
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In complete elevator legs, heads, boots and elevator legging, screw conveyor troughs, bins and custom built sheet metal work to specifications.

That's a fact! For the cup with the Logarithmic Curve is scientifically designed to scoop up super capacity loads in elevator boot and to discharge them completely at elevator head. Yes, the Calumet unloads its entire load at the proper point. Absolutely no backlegging.

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ASK YOUR JOBBER

Step up operation with the cup that does not give grain a "Merry-Go-Round" ride.



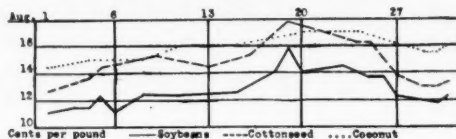
B. I. WELLER CO.

Weller Pat. No. 1944932

327 S. LaSalle St. Chicago 4, Ill.

Thirty-five years of Service to the Grain Industry

CRUDE VEGETABLE OIL, TANKCARS



the Chicago market at \$2.39 and closed at \$2.34, the low. The high was \$2.49 Aug. 22.

Bulk soybean oil meal, basis Decatur, opened at \$85, the low, and closed at \$86.50. High was \$100 Aug. 18-22. Market for old crop soybean oil meal was very strong and supplies were very scarce first 3 weeks.

Crude soybean oil in tankcars opened at 11c, the low and closed at 12c. High was \$15.50 Aug. 22.

Supplies of oilseed meals for the first 3 quarters of the season were the largest of record and totalled 5¾ million tons, reports USDA's grain branch, PMA. This compares with slightly under 5 million tons available in the same period last year. Oilseed meal supplies for 1949-50, based on August 1 prospects for oilseed crops, will be as large as the average of recent years but somewhat under the 1948-49 record.

Exports of oilseed meals, October through June totalled 250,000 tons compared with 53,000 for the same period last season and 168,000 tons during the same months of 1946-47.

MEMPHIS' SOYBEAN OIL MEAL FUTURES CLOSINGS AUG. 31*
Oct., flat 66.75; Dec., 61.25-62.00; Jan., 60.50-61.50; Mar., 60.50-61.00; May, 59.50-60.00; Jly., 58.75-59.25; Sales: 1,400 tons.

* Reported by Chicago Journal of Commerce.

● **SOYBEAN STOCKS.** Production and Marketing Administration's commercial grain stock reports for August 2-23.

	Aug. 2	Aug. 9	Aug. 16	Aug. 23
Atlantic Coast	194	113	89	130
Gulf Coast	727	575	730	755
Northwestern and Upper Lake	555	558	356	120
Lower Lake	1,101	807	638	322
East Central	281	278	240	97
West Central, Southwestern & Western	70	141	7	23
Total current week	2,928	2,472	2,060	1,447
Total Year ago	459	796	568	343

In the positions for which information is now available, about 22 million bushels of soybeans were in storage on July 1, the Bureau of Agricultural Economics reports. This total does not include stocks at processing plants, a segment of the storage facilities covered by reports of the Bureau of the Census in a monthly report on fats and oils.

Included in this partial total now available are commercial stocks of 3.3 million bushels of soybeans at terminals, reported by the Production and Marketing Administration.

The Crop Reporting Board estimated July 1 farm stocks at 9.4 million bushels and stocks at interior mills and elevators at 9.1 million bushels. The latter are the largest for July 1 in the 8 years of record, while farm stocks were exceeded only in 1943 and 1944.

Processors' stocks were about 36.3 million bushels on April 1, 1949. In the past 6 years the decline in processors' stocks from April 1 to July 1 has averaged about 12 million bushels. The decline was only 6.2 million bushels in 1945, but has ranged from nearly 11.5 million bushels in 1943 and 1944 to nearly 14 million bushels in 1946, 1947 and 1948.

The decline in farm stocks from April 1 to July 1 this year was over 42 million bushels, the largest of record. Processors consumed 31.4 million bushels in April and May.



Headquarters for the Standardized Soybean Lecithin sold under the renowned YELKIN trademark — backed by an organization preeminent for its "know how" of Lecithin and its uses.

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STOCKS OF SOYBEANS JULY 1, 1949, WITH COMPARISONS

Position	Reported by	July 1, 1947	July 1, 1948	April 1, 1949	July 1, 1949
		Thousand bushels			
On Farms — Crop Reporting Board		6,389	4,311	51,644	9,416
Terminals — Grain Branch, P.M.A.		2,258	1,244	7,206	5,294
Processing Plants — Bureau of the Census		28,004	23,042	36,305	*
Int. Mills, Elev. & Whsen. ¹ — Crop Reporting Board		3,389	3,238	19,232	9,124
TOTAL		40,040	31,835	114,387	2

¹ All off-farm storages not otherwise designated.

² Not yet available.

● OIL MILL PRODUCTS. Reported by Bureau of Census, Department of Commerce.

SOYBEANS: RECEIPTS, CRUSHINGS AND STOCKS AT OIL MILLS, BY STATES, JUNE 1949 — MAY 1949 (Tons of 2,000 pounds)

State	Receipts at mills		Crushed or used		Stocks at mills	
	June 1949	May 1949	June 1949	May 1949	June 30, 1949	May 31, 1949
U. S.	318,166	282,636	457,914	463,759	549,999	689,747
Arkansas	(1)	(1)	8,636	7,371	(1)	(1)
Illinois	129,137	110,414	188,239	183,722	225,143	284,245
Indiana	26,375	20,001	38,511	39,583	37,227	49,163
Iowa	68,651	71,256	81,345	89,427	72,528	85,222
Kansas	8,827	11,137	11,347	11,486	9,423	11,943
Kentucky	6,270	3,464	13,166	13,414	24,010	30,906
Minnesota	9,462	4,508	14,076	10,463	14,271	18,885
Missouri	19,104	13,244	23,399	17,266	40,841	45,136
Nebraska	(1)	5,505	5,238	4,598	(1)	5,679
No. Carolina	817	1,409	1,951	4,608	3,303	4,437
Ohio	42,079	28,789	53,889	54,373	90,645	102,455
Texas	(1)	(1)	(1)	(1)	(1)	(1)
All other	7,244	12,909	18,117	27,048	32,608	48,676

¹ Included in "All other" to avoid disclosure of individual operations.

SOYBEAN PRODUCTS: PRODUCTION AND STOCKS AT OIL MILL LOCATIONS, BY STATES, JUNE 1949—MAY 1949

State	Crude oil (thousand pounds)		Cake and Meal (tons)	
	Production	Stocks	Production	Stocks
	June 1949	May 1949	June 1949	May 1949
U. S.	150,583	154,183	39,260	37,987
Arkansas	2,535	2,173	2,253	1,043
Illinois	69,930	62,214	12,338	12,162
Indiana	12,713	12,889	2,585	1,907
Iowa	27,360	30,422	6,911	7,643
Kansas	3,598	3,698	1,641	1,764
Kentucky	4,543	4,634	836	601
Minnesota	4,546	3,439	1,824	1,626
Missouri	6,658	5,576	1,861	1,421
Nebraska	1,601	1,563	322	427
N. Carolina	547	1,235	1,008	1,298
Ohio	17,501	18,227	3,994	4,991
Oklahoma	(1)	(1)	(1)	(1)
Texas	(1)	(1)	(1)	(1)
All other	4,951	8,113	3,687	4,004

¹ Included in "All other" to avoid disclosure of individual operations.

PRIMARY PRODUCTS EXCEPT CRUDE OIL, AT CRUDE OIL MILL LOCATIONS: PRODUCTION, SHIPMENTS AND TRANSFERS AND STOCKS, JUNE 1949—MAY 1949

Products	Production		Shipments and transfers		End of month stocks	
	June 1949	May 1949	June 1949	May 1949	June 30, 1949	May 31, 1949
SOYBEAN:						
Cake and meal*	355,935	364,201	363,197	362,872	17,494	24,756
Lecithin**	1,112,335	1,094,400	1,131,718	831,901	1,106,515	1,125,898
Edible soy flour, full fat*	486	334	463	384	187	164
Edible soy flour, other*	5,448	4,337	5,978	4,250	1,494	2,024
Industrial soy flour*	(1)	(1)	(1)	(1)	(1)	(1)

* Unit of measure in tons.

** Unit of measure in pounds.

¹ Not shown to avoid disclosure of individual operations.

● SHORTENING SHIPMENTS. Reported by the Institute of Shortening and Edible Oils, Inc., in pounds.

Week ending July 30	7,345,103
Week ending August 6	8,194,181
Week ending August 13	8,677,612
Week ending August 20	9,186,799

Shortening and edible oil shipments in June totaled 234,141,000 lbs. in July compared with 258,955,000 lbs. in June.

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● **PROCESSING OPERATIONS.** 133 soybean oil mills were in operation in 1947, reports Bureau of the Census.* This compares with 47 in 1939 and 26 in 1938.

Employees numbered 6,460 in 1947 compared with 2,010 in 1939. Salaries and wages paid out were \$18,773,000 in 1947; \$2,851,000 in 1939.

Production and related workers in the soybean processing industry totaled 5,076 in 1947 and wages paid totaled \$13,489,000.

Cost of materials, fuel, electricity and contract work in processing operations in 1947 totaled \$480,418,000. Value of products shipped was \$585,709,000. This compares with costs of \$34,435,000 and value of the products shipped of \$43,947,000 in 1939.

*Census of Manufacturers 1947.

● **INSPECTIONS.** Inspected receipts of soybeans in June, as in May, were the largest of record for that month and considerably above average, according to reports to the Department of Agriculture. June inspections totaled 6,317 cars compared with 6,519 cars in May and 2,832 cars the June average for the crop years 1942-46. Inspected receipts for October through June were 93,703 cars compared with 76,776 cars for the same months last season.

The quality of the soybeans marketed in June was slightly improved, 77 percent grading No. 2 or better compared with 76 percent in May and 74 percent for October through June. Ninety percent graded No. 2 or better in June, and 87 percent for October through June, last season.

● **FACTORY USE SOYBEAN OIL.** Factory production of crude soybean oil totaled 150,583,000 lbs. in June; 154,183,000 lbs. in May. Production of the refined oil in June totaled 124,209,000 lbs.; in May 118,045,000 lbs.

Factory consumption of crude soybean oil in June totaled 137,212,000 lbs.; in May 131,971,000 lbs. Consumption of refined soybean oil in June totaled 119,081,000 lbs.; in May 123,969,000 lbs.

Factory and warehouse stocks of crude soybean oil June 30 totaled 84,868,000 lbs.; 88,631,000 lbs. May 31. Stocks of refined soybean oil totaled 91,854,000 lbs. June 30; 102,045,000 lbs. May 31.

● **SOYBEAN GLUE.** Consumption of soybean glue by the softwood plywood industry in June was 2,717,000 lbs. compared with 2,478,000 lbs. in May; and 2,509,000 lbs. in June 1948.

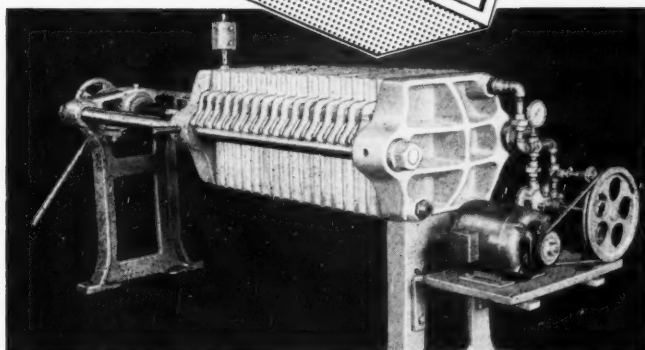
Consumption of phenolic resin glue was 2,716,000 lbs. in June. Total consumption of all glues by the plywood industry in June was 5,998,000 lbs. compared with 5,948,000 lbs. in May and 6,037,000 lbs. in June 1948.

Stocks of soybean glue June 30 totaled 1,340,000 lbs. compared with 1,680,000 lbs. May 31 and 1,531,000 lbs. June 30, 1948.

● **SEED IMPORTS.** Imports of soybean seed admitted into the U. S. under the federal seed act totaled 381,800 lbs. during the period July 1, 1948 to May 31, 1949, reports Production and Marketing Administration. All came from Canada.

This compares with 300 lbs. of imports of soybean seed for the same period a year earlier.

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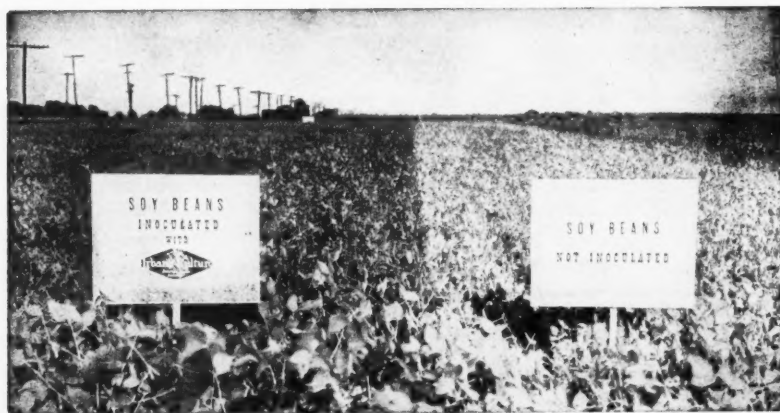
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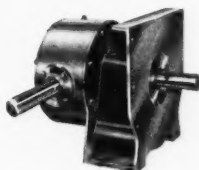
SCREW CONVEYORS ACCESSORIES



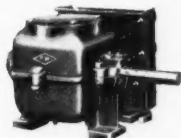
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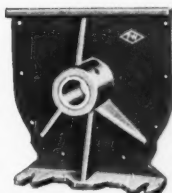
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IF you live in Texas or have visited there, you have probably tasted some of J. H. Youngblood's chicken. His restaurants in Waco, Dallas, and Austin are famous. This Ford Truck user's slogan, "We hatch 'em . . . grow 'em . . . prepare 'em . . . fry 'em," stands for some of the most tender, delicious, full-meated chicken you'll find!

He figured that in order to make money out of chickens, you have to control every step in production and marketing. And he did! Today, Youngblood's operation covers the entire Southwest . . . has grown to where he needs 20 Ford Trucks in his business.



"WE START with the hen that lays the egg," Youngblood (right) and one of his managers examine a New Hampshire-White Leghorn chick. 65,000 of these special crosses are hatched each week. And a carload of mixed feed comes from the company's mill every day to feed them!



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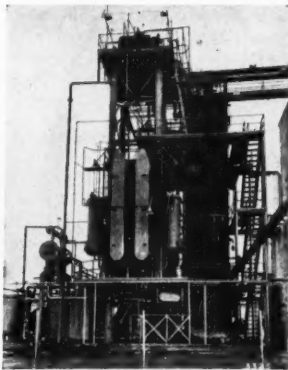
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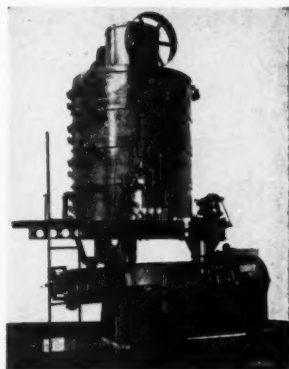
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LET'S SPREAD BREAD AS WE CHOOSE!

The dispute between the butter and the oleomargarine people is finally approaching a showdown in Congress. This is the climax of an old and bitter fight. Many thousands of words and dollars have been expended on it. Over the years some facts have been distorted or lost sight of in all the excitement. But the argument as far as justice and common sense are concerned, boils down to this:

A lot of people prefer butter to margarine. If they can afford it, they will always buy it in preference to margarine as long as it is available. Then there are people who would about as soon eat one as the other.

There are also many people who cannot afford butter, whatever their taste preferences might be.

The people in the last two groups are entitled to buy margarine without penalty. The 63-year-old margarine taxes and the license requirements for manufacturers, wholesalers and retailers should be lifted. These restrictions have always kept the price of margarine artificially high. But there is also disagreement over yellow margarine. The butter people want it banned from interstate commerce. The margarine people think that the housewife should not be required to color their product after she gets it home.

The law now requires that every package of oleomargarine be identified as such. The House has passed a bill repealing the margarine taxes but requiring that every public eating place that serves its patrons margarine instead of butter must let them know it.

THE PRESS

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BROKERS TO THE SOYBEAN PROCESSOR

That seems fair enough.

When these conditions are met, there is no just reason why the federal government should bar one product from interstate commerce just because it partially competes with a similar product.

There are now something less than a score of states where people cannot buy yellow margarine, and could not no matter what action Congress took.

There is nothing the federal government can or should do about this. It is something for the people of the various states to settle.

... It is silly to ask the federal government to take sides in this state fight on the grounds that unrestricted sale of margarine would wipe out the butter and dairy industries.

—Colliers Magazine

LETTERS

Exchange Troubles

TO THE EDITOR:

Since our defeat 100,000 to 200,000 tons of U. S. soybeans have been imported here yearly. They give much nutrition to our people for which we cannot express too many thanks.

Our Tsurumi plant has a daily capacity of 325 tons of soybeans by solvent extraction. We hope to know more about your crop.

Your American Soybean Association is well known also to us as having given great contributions to the industry in your country. The Soybean Digest published monthly would be highly esteemed by us also.

Would you care somehow for us to receive the Digest monthly as well as the 1949 Soybean Blue Book

and other publications?—I. Shimada, superintendent of Tsurumi plant, the Shova Sangyo Co., Yokohama, Japan.

Many people in foreign countries are unable to subscribe for the Soybean Digest or the Soybean Blue Book due to lack of currency exchange. The Digest is unable to comply with the many requests for free subscriptions that arise due to this condition.—Editor.

Membership Is Open

TO THE EDITOR:

I am a chemical engineer in China and now studying fertilizer in this country. I would like to devote myself to the soybean industry in the future.

I hope I can be a member of your association. If it is impossible due to citizenship I would like to know how to subscribe to your magazine, Soybean Digest.—Yang, Wen Tsao, Washington University, St. Louis 5, Mo.

Membership in the American Soybean Association is open to all interested in soybeans regardless of citizenship. We now have members in 38 foreign countries as well as the U. S. and Canada.—Editor.

Gillette-Wherry Bill

TO THE EDITOR:

This is to advise that we are supporting the Gillette-Wherry bill S1594 and the Granger bill HR4538.

We have wired and written our Senators and Congressman and wired the sponsors of the above bills to that effect.—Ronnie F. Greenwell, secretary-manager Missouri Cotton Producers Association, Portageville, Mo.

These bills would levy an import duty on fats and oils imported in excess of exports and would tend to hold fats and oils prices at parity levels.—Editor.

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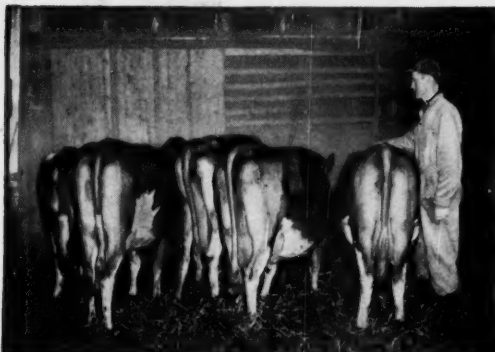
Glidden also offers 44% Protein Soybean Oil Meal and 41% Protein Soybean Oil Meal for use in formula feed manufacture; 30% Protein Extracted Soybean Feed for use as feed ingredient; and Crude Degummed Soybean Oils—extracted and expeller process.

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5165 West Moffat Street, Chicago 39, Illinois





\$340 PROFIT OVER FEED COST from one cow alone, as shown by D.H.I.A. records, is typical of Ed's "Brac Meads Guernsey Farm" herd. The 10 head averaged 410 lbs. butterfat last year. Feeding the Wayne Way (15% protein ration made with his own grains and Wayne 32% Dairy Feed) he got more butterfat, more milk and realized more profit with fewer cows than the year before!



85% EGG PRODUCTION ALL FALL AND WINTER from her 106 hens proves Rosalie is right in her feeding plan. She gets 100 two-week-old sexed pullets and 100 straight-run chicks into her brooder house by March 1. Roosters are eaten as fryers; pullets thrive on the Wayne Program, producing 1st eggs early in August. Birds are culled and housed before September 1 for early fall egg production.

How Ed and Rosalie Farmer CUT PRODUCTION COSTS: INCREASED NET PROFITS ... THE WAYNE WAY

Ed and Rosalie Farmer do a "big" job of farming on their "little farm" of some 170 acres near Rockford, Ohio. They feel, however, that perhaps the days of high farm prices are about over. So they're wisely using the tools of sound planning, management and feeding to cut production costs, increase efficiency and *step-up their net profits.*

USES FARM RECORDS

Firm believer in *farm records*, Ed knows his costs and net income figures down to the penny. He aims for high net income by hitting high markets and getting maximum production per animal unit. 50 to 60 pigs saved each year from his 6 to 7 sows, as well as the butterfat and egg production records shown above, are strong proof that his business-like methods (which includes the Wayne Way of feeding) pay off substantially.

TIMES MARKETING

Ed times his spring and fall farrowings so his pigs hit 220 to 230 lbs. in 6 months for the profitable early September and early March markets. Rosalie has plenty of good-sized eggs to sell during early fall high egg prices, too.

Ed and Rosalie sum it up this way: "We bought this farm in 1947 when land prices were high, and rent 56 acres. We decided if we were going to get it paid for we'd better make every hen, pig and cow a money-maker. We do just that by good management, low operating costs and balanced feeding. We get fast, low-cost production by following the Wayne Feeding Program just as recommended. It pays off in the net profit column, for we have comfortable living and are getting our farm paid for."

FREE INFORMATION AVAILABLE

Wayne Feeds are proud of the part they play in the success of farmers, large and small, all over the country. Backed by "IQ" (Ingredient Quality) *triple-tests* for nutritive value, they can help you, too, cut production costs and increase net profits. See the friendly Wayne Feed Dealer near you now for complete information—or write

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**ONE OF AMERICA'S OLDEST AND LARGEST
MANUFACTURERS OF FEED... EXCLUSIVELY**



GROWING THEIR OWN REPLACEMENT HEIFERS is slow but sure, the Farmers find. Here Johnny strokes a day-old heifer calf getting colostrum milk from its mother. In a couple of days, it goes on nipple-pail feeding, until 4 weeks old, and from then on, Wayne Calf Pellets, shelled corn and oats will be substituted for milk. That means up to 1,000 lbs. more milk to sell!

